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Examination of wellness policy formation and process in U.S. school districts

Carol H. Longley
Iowa State University

Examination of wellness policy formation and process in U.S. school districts

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Carol H. Longley

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Program of Study Committee:
Jeannie Sneed, Major Professor
Mary Gregoire
Mary Jane Oakland
Stephen Sapp
Catherine Strohbehn

Iowa State University

Ames, Iowa

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P.O. Box 1346
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ABSTRACT

The purpose of this study was to examine the process of wellness policy development in public school districts across the nation. The study examined the environments in school districts that support or hinder district-wide policy development. Phase 1 studied each state's school nutrition legislation, regulations, and training to determine the environment for wellness policy development. Phase 2 consisted of 21 structured telephone interviews with school district foodservice directors in six USDA regions to explore the process of wellness policy development in their school districts and identify supporting factors and barriers encountered. Phase 3 was a national survey to examine wellness policy development.

In Phase 1, three states in June 2004 met criteria for a strong legislative and regulatory environment for development of school district wellness policies. When states were evaluated in June 2006, 30 states met criteria for a strong legislative environment. In Phase 2, supporting factors identified by directors for wellness policy development included federal mandate, concern about student health, and the addition of state laws and regulations supporting wellness policies. Major barriers included competition for teaching time, priorities with No Child Left Behind, and funding for activities and physical education. Enforcement of the developed policy by school administration and money to support the program were the most frequently mentioned needs to make the wellness policy successful. Foodservice directors believed major change in nutrition policies will come in food choices in vending machines and a la carte foods. Directors believed the establishment of one federal nutrition policy is essential. Foodservice directors, in Phase 2, indicated wellness policies addressed overarching goals for nutrition education and minutes per day for physical education. Other

goals included adequate time for students' meals and consistent health messages for the entire school day with the use of food for rewards and parties. Interviews indicated wellness policy teams have brought together school entities that normally work independently to focus on the goal of wellness. Foodservice directors reported few districts had existing structures or experience dealing with health issues. States with training in policy development, step-by-step templates, and additional nutritional guidelines offered more support in the development process. Phase 3 (n = 191, 63.1%) confirmed the findings in Phase 2 that indicated the need for fundraising with food and competition for teacher and principal time as major barriers to the development and implementation of a wellness policy. School district wellness policies, after the federal mandate, addressed time (82.6%) and location (72.7%) for the sale of food in the majority of school districts. Significant changes in a la carte foods, party guidelines, fundraising criteria, and use of food for rewards were observed. Implications for future practice include success of a wellness policy can be changed by the development of laws and regulations at the federal level. Findings of this study suggest implementation of nutrition guidelines is the area of greatest change. The variety of wellness policies and state laws and regulations developed and implemented between June 2004 and fall 2006 have created confusion for entities working with school districts. A federal mandate for one wellness policy would clarify product needs for schools. Success in the classroom is limited by other federal requirements that compete for school funding and teachers' and principals' time. Nutrition education materials that are integrated into current curriculum and support the effort of No Child Left Behind are essential for the success of nutrition education in schools. Changes in nutrition education is the variable most likely to change the attitude of foodservice directors about the wellness policy.

CHAPTER I. INTRODUCTION

Obesity, especially in children, is reaching epidemic proportion in the United States (U.S. Department of Health and Human Services [HHS], 2001). The search for solutions to the increasing rate of obesity turns the focus on public schools, which touch the lives of 95% of children in the U. S. Because of federal legislation, school boards were required to develop policy to improve the nutrition environment and physical and nutrition education in their district.

Background of Wellness Policy Legislation

The School Wellness Policy mandate, which was part of the Child Nutrition and WIC Reauthorization Act of 2004, created a federal law to combat childhood obesity at the school district level. The Reauthorization Act of 2004 required local education agencies sponsoring school meal programs to establish wellness policies by the beginning of School Year 2006-2007. Section 204 of Public Law 108-265 of the Child Nutrition and WIC Reauthorization Act of 2004 required that, at a minimum, the wellness policy: (a) include goals for nutrition education, physical activity, and other school-based activities that are designed to promote student wellness; (b) include nutrition guidelines for all foods available on each school campus during the school day; (c) provide an assurance that guidelines for reimbursable school meals shall not be less restrictive than regulations and guidance issued by the Secretary of Agriculture; (d) establish a plan for measuring implementation of the local wellness policy, including designation of one or more persons responsible for ensuring that the school meets the local wellness policy; and (e) involve parents, students, representatives

of the school food authority, the school board, school administrators, and the public during development of the school wellness policy.

Overweight Prevalence Among Children and Adolescents

The percentage of overweight children has more than doubled in the past 20 years, and rates among adolescents have more than tripled (Hedley et al., 2004; Ogden, Flegal, Carroll, & Johnson, 2002). In 2002, 16% of children ages 6 to 9 years old were overweight (Hedley et al., 2004). Among minorities and lower-income youth, rates of overweight were higher (Gordon-Larsen, Adair, & Popkin, 2003). Several weight-related conditions observed in adults have been increasingly diagnosed in children and adolescents (Fagot-Campagna, 2000; Rosenbloom, Joe, Young, & Winter, 1999). Almost unknown among children and adolescents in 1990, Type-2 diabetes currently accounts for nearly half of all new cases of diabetes among youth in some communities (Fagot-Campagna, 2000). In addition, 61% of overweight children and adolescents have at least one risk factor for heart disease (Freedman, Dietz, Srinivasan, & Berenson, 1999). Childhood overweight links to social and psychological problems, such as discrimination and poor self-esteem (Freedman et al., 1999; Strauss, 2000). Children and adolescents who are overweight have a greater risk of being overweight as adults (HHS, 2001). Further, obese adults who were obese as children have more severe obesity than adults who became obese later in life (Freedman, Khan, Dietz, Srinivasan, & Berenson, 2001).

Confluence of Childhood Obesity and School

Data on childhood obesity, inactivity, and poor food choices are alarming. Physical activity and eating behaviors are shaped by a variety of influences in our society including families, businesses, churches, community organizations, government agencies, health care

providers, media, and schools, requiring the involvement of all sectors to reverse the epidemic (Fox, Crespinak, Connor, & Battaglia, 2004; Wechsler, Brener, Kuester, & Miller, 2001). Schools are particularly well positioned to play an important role in fighting the rising childhood obesity rate, because students spend a significant part of the day, and much of the year, in school. Moreover, the promotion of physical activity and healthy eating long has been a fundamental component of American education (Wechsler, McKenna, Lee, & Dietz, 2004). It has been argued that schools can play a major role in helping reduce childhood obesity by altering various policies and practices (Shek, 2004) and providing a healthy school environment, ensuring coordination of a comprehensive nutrition education program, providing well run child nutrition programs, and engaging the support of community partners (American Dietetic Association, Society for Nutrition Education, & American School Food Service Association, 2003).

School Environment

One explanation for the increasing concern about childhood obesity may be found in the school environment that offers students more options than the government-regulated National School Lunch and Breakfast Programs (U.S. Department of Agriculture, Food and Nutrition Service [USDA], 2000), such as purchasing single items from a la carte programs, school stores, snack bars, and vending machines. Students from some schools may leave campus to purchase food. Fundraisers and food as rewards further compromise the nutritional value of food offered at school. The school food environment can have a significant role in adolescents' food choices because a large proportion of their needed daily calories are consumed at school (Burghardt, Gordon, Chapman, Gleason, & Fraker, 1993; Fox et al., 2004).

Federal regulations have limited jurisdiction in regulating food sold in schools outside of the federal meal programs. Current regulations only prohibit the sale of food of minimal nutritional value (FMNV) during meal periods in school cafeterias and other foodservice areas. From 1980 to 1983, federal regulations prohibited the sale of FMNV anywhere in the school from the school day's onset until the last meal period. In *National Soft Drink Association v. Block* (1983), the Court of Appeals for the District of Columbia overturned this regulation and construed a 1977 amendment of the Child Nutrition Act, allowing the USDA to regulate the sale of competitive foods only in foodservice areas during meal periods (U.S. Government Accountability Office [GAO], 2005). The court ruling opened the door for the sale of competitive foods throughout the school and throughout the day. GAO's (2005) report to Congress noted that nearly 90% of schools offered competitive foods in 2003–2004. Changes in the school environment have taken different forms with school principals, coaches, parent groups, and student groups, as well as foodservice staff, becoming major stakeholders in the sale of food and beverages to students, often with a profit motive.

School Nutrition Policy

French, Story, and Fulkerson (2002) found that secondary principals believed it was important to provide a healthful environment at school, yet only one third of their schools had a nutrition policy and even fewer had specific policies on types of foods and beverages sold in vending machines, school stores, and school functions. Even when school nutrition policy existed, researchers noted serious gaps between existing policy and compliance (McDonnell, Probart, Weirich, Hartman, & Bailey-Davis, 2006). The lack of school policy or failure to implement existing policies communicates to students that healthful nutrition is not a priority (French et al., 2002).

School Wellness Policy Development

French et al. (2002) suggested that district health councils provide the best mechanism to facilitate school-level policy development. The infrastructure for developing food and nutrition policies already exists in many schools. About two thirds of states, districts, and schools have a comprehensive tobacco-use policy consistent with Centers for Disease Control and Prevention (CDC) guidelines (Small et al., 2001). Almost all states, districts, and schools have the federally mandated policies that prohibit the use of alcohol, illegal drugs, physical fighting, harassment, and weapon possession (Small et al., 2001). The School Health Policies and Program Study (SHPPS) found that about two thirds of schools had existing health councils that develop policies or coordinate activities on health issues (Wechsler et al., 2001). These school health councils typically included school staff, parents, and community members (Wechsler et al., 2001).

Kubik, Lytle, and Story (2001) offered a less optimistic picture of the ability of school district administrators to form nutrition policies. They concluded that establishing a nutrition policy at the local school level is complex and time intensive, and school administrators do not know how to establish and implement nutrition policies.

Motivating a school board to develop a comprehensive nutrition policy also can be challenging. Brown et al. (2004) studied California school board members' perceptions of factors influencing nutrition policy development. One third of board members reported that a nutrition policy existed in their district. Almost one half (45%) were not sure if they had a nutrition policy in their district. A positive relationship existed between those who reported supportive foodservice directors and those who had a nutrition policy. When interviewed, school board members who believed they were most effective in developing nutrition policy

along with providing community leadership were also the board members who felt they were adequately prepared about nutrition-related issues. Board members reported a need for training and skills to better prepare themselves to advocate for school nutrition policies. Most board members supported practices that provided more health promoting food choices for children in their district. Most encouraged prohibiting food and soda advertisements in schools. Though school board members expressed concern about the well being of students, competing priorities limited the extent to which nutrition issues were addressed at board meetings (Brown et al., 2004).

Need for Research

The School Wellness Policy mandate is the first federal policy addressing childhood obesity, mandating physical and nutrition education, and emphasizing the overall school nutrition environment. Limited research on nutrition policy development exists. Even less research exists that evaluates the process of development of a federally mandated, locally written school nutrition policy (Serrano et al., 2007). Evaluating the process will identify successes and barriers that will be helpful for future practice, research considering the effectiveness of the policy, and future legislation addressing childhood obesity.

Purpose of the Study

The purpose of this study was to examine the process of wellness policy development in school districts. The study examined the internal and external environments in school districts that supported or hindered district-wide policy development. Complexity theory, which encompasses systems theory, was chosen as the framework for the assessment of the wellness policy development and the theory base for predicting behavior related to implementation of the wellness policy (Middleton-Kelly, 2003).

Research Questions

Specific research questions addressed in this study include:

1. What were foodservice directors' perceptions of the environment of the state for wellness before the development of the wellness policy?
2. Was there a relationship between the prior environment in a state and success in development of a wellness policy?
3. Were there district wellness policies in place before the federal mandate? If so, what issues were addressed in the policies?
4. What were foodservice directors' beliefs and attitudes about the potential benefit of wellness policies to students' health?
5. What were the foodservice directors' perceptions of the wellness knowledge of members of the committee?
6. What processes were used by the wellness committee including formation, committee meetings, group decision making, policy formation, written policy development, and evaluation plans?
7. What were foodservice directors' perceptions of administrative support for the development and implementation of the wellness policy? What were the foodservice directors' perceptions of school board support for the development and implementation of the wellness policy?

Significance of the Study

This study examined the development of wellness policy in public school districts that addresses all aspects of students' nutrition and physical activity. No research has been conducted to analyze wellness policy formation in schools as mandated by the Child

Nutrition and WIC Reauthorization Act (2004). Evaluating the school wellness policy formation process may assist policy makers in understanding potential roadblocks, advocates, and adversaries. Results of this study will provide direction for possible future legislation to develop school wellness policy at the state and the federal level as well as support assessment of the implementation of policy in the future.

Definitions of Terms

Contract management: A contracted company, outside of the school district corporation, that provides ongoing monitoring and management of a school foodservice operation consistent with the agreed terms and conditions.

Competitive foods: Foods sold to children in foodservice areas during meal periods that are not associated with the National School Lunch or Breakfast Programs (*Federal Register*, 1980).

Food of minimal nutritional value (FMNV): Food that provides less than 5% of the Reference Daily Intake (RDI) for eight specified nutrients per serving (USDA, 2001). The specified nutrients include protein, vitamin A, vitamin C, niacin, riboflavin, thiamine, calcium, and iron.

Nutrition integrity: A level of performance that assures all food and beverages available in schools are consistent with the *Dietary Guidelines for Americans* and, when combined with nutrition education, physical activity, and a healthy school environment, contribute to enhanced learning and the development of lifelong, healthy eating habits (School Nutrition Association, 2003).

Overweight in children and teens: Body Mass Index (BMI) is a number calculated from a child's weight and height. After BMI is calculated for children and teens, the BMI

number is plotted on the CDC BMI-for-age growth charts (for either girls or boys) to obtain a percentile ranking. Percentiles are the most commonly used indicator to assess the size and growth patterns of children in the United States. The percentile indicates the relative position of the child's BMI number among children of the same sex and age. The growth charts show the weight status categories used with children and teens (underweight, healthy weight, at risk of overweight, and overweight). BMI-for-age weight status categories and the corresponding percentiles are shown in Table 1 (HHS, Centers of Disease Control and Prevention [CDC], 2006).

Table 1. BMI Weight Categories

Weight status category	Percentile range
Underweight	Less than the 5th percentile
Healthy weight	5th percentile to less than the 85th percentile
At risk of overweight	85th to less than the 95th percentile
Overweight	Equal to or greater than the 95th percentile

School board: The governing body of the school district consisting of members elected or appointed on a district-wide or area basis. Board members serve a predetermined term of office.

School environment: The time and place food is sold as well as the different venues for food sales and service.

Self-operated: A school foodservice operation managed by school district employees.

Size of schools: In this study, a medium school district was defined as having between 2,500 and 9,999 students, large school district between 10,000 and 39,999 students, and an

extra large district as having greater than 40,000 students. The definition of school sizes was established by Iowa State University Child Nutrition Program students.

Stakeholders: Individuals and groups with investment in the program. These may include those presumed to benefit, those with particular influence, or those who support the program or oppose it.

Template: A pattern being used as a guide to the formation of a product being made.

Wellness environment: State, federal, and local laws or regulations that determine when and what food is served. The environment extends to the level of nutrition and physical education offered in the school and the coordination of school departments to align nutrition and physical education curriculum and services toward a common goal.

Wellness policy: A school board policy covering nutrition education, physical education, school nutrition environment, food sold during meal hours, and foods sold outside of meal hours that includes a monitoring component and complies with the Child Nutrition and WIC Reauthorization Act of 2004.

CHAPTER II. LITERATURE REVIEW

The literature review includes eight topics driving wellness policy development in schools. The eight topics include legislative and regulatory environment, school environment, school financial environment, functions of health committees in schools, administrative support for wellness policies, key elements of the wellness policy, results of early intervention programs, and the theoretical framework of complexity theory as it relates to school wellness policies.

Legislative and Regulatory Environment

In 2002, 31 states had no state competitive food policies other than USDA regulations (USDA, 2002). In 2005, state legislators introduced nearly 200 bills to address the nutritional quality of school foods (Healthy Policy Tracking Service, 2006). In 2005, legislation written to prevent childhood obesity had several policy approaches such as defining nutrition standards, establishing nutrition education, including wellness initiatives, establishing health screening, initiating snack taxes, and distributing information on reading and using nutrition labels (National Conference of State Legislators [NCSL], 2006).

As of August 2006, state legislatures in 39 states considered or enacted legislation related to the nutritional quality of school food and beverages (NCSL, 2006). This includes 20 states in which consideration was given to defining nutrition standards for schools, 17 states in which legislation was enacted, one state in which legislation was sent to the lieutenant governor, and one state in which legislation was vetoed. Under the auspices of the governor of each state, Texas and New Jersey school nutrition requirements were implemented through the state Department of Agriculture and regulations were later fine

tuned by legislators in 2005 (New Jersey Department of Agriculture [NJDA], 2006; Texas Department of Agriculture [TDA], 2004).

The Texas Public School Nutrition Policy offers a comprehensive program to improve the nutrition environment in schools. The policy defined nutrition standards for foods sold and brought to school during the school day. The Texas Public School Nutrition Policy regulates meals and a la carte foods, portion sizes, food preparation methods, allowable beverages, and food for parties. The policy also designates time and place for selling food (TDA, 2004). Before 2004, Texas lawmakers had made several failed attempts to pass legislation to regulate school foods. These disappointing outcomes prompted the Texas Department of Agriculture Secretary to encourage the Governor to move nutrition programs out of the Department of Education to the Department of Agriculture.

Similarly, the state Department of Agriculture administers nutrition programs in New Jersey. The New Jersey Department of Education, Department of Health, and Department of Agriculture collaborated in developing a comprehensive program to combat childhood obesity in New Jersey (NJDA, 2006). Nutrition standards for snacks sold a la carte, in school stores, vending machines, and fundraisers are included in a statewide model wellness policy. Local school districts are allowed to adopt their own policies to conform to the federal mandate by the start of school 2006, but are required to adopt the New Jersey model policy by start of school 2007 (NJDA, 2006).

Additional policy approaches to address childhood obesity received consideration or enactment in 2005 (NCSL, 2006). Policy approaches include nutrition education or wellness initiatives in schools measuring and reporting body mass index confidentially to parents, providing opportunities for physical activity during the school day, distributing information

on the nutrition content of school foods, and taxing snack foods with minimal nutritional value (NCSL, 2006).

Legislation to require non-invasive health screening, risk analysis, or testing of schoolchildren became law in 2003 in California and Illinois. Eight states introduced or enacted diabetes screening and management initiatives in 2005, and in the same year, a number of states considered legislation to provide or strengthen private insurance coverage for obesity prevention or treatment. Four states have ratified laws for a public service campaign to raise awareness of childhood obesity and its impact and to respond to the problem with wellness, nutrition, and physical activity initiatives (NCSL, 2006).

School Environment

Since 1983 when a court ruling opened the door for the sale of competitive foods, significant changes have occurred in the school environment. Twenty years of unrestricted sales in a la carte lines, fundraisers, school stores, and vending machines have created concern that these sales undermine nutrition integrity and discourage participation in traditional meal programs (GAO, 2005). Researchers found students who consumed school meals under the National School Lunch Program and School Breakfast Program were more likely to meet recommended reference dietary intakes than students who did not participate in these programs (Gleason & Suitor, 2001; Kleinman et al., 2002). Federal regulations established that school meals, averaged over a week's service, meet recommendations of the Dietary Guidelines, and that school lunch provides one third and school breakfast one fourth of the 1989 Recommended Dietary Allowances (School Lunch Program, 2005).

The GAO (2005) report to Congress on competitive foods confirmed that school meal programs contributed to better nutrition and healthier eating behaviors for participating

children and adolescents. Competitive foods, such as soda, chips, and candy, may undermine the nutrition integrity of student food choices and discourage participation (GAO, 2005). In various ways, changes in the school environment have created problems for students' nutritional health.

Availability of Foods with Low Nutrient Density

Soft drinks are widely available in schools (Story, Hayes, & Kalina, 1996). The national SHPSS found vending machines, many offering soft drinks, located in almost 50% of elementary schools, 75% of middle schools, and 96% of high schools studied (Wechsler et al., 2001). A 2000 U.S. General Accounting Office (GAO) study found the sale of soft drinks by schools or districts with exclusive pouring rights was the fastest growing type of commercial activity in U.S. schools. Researchers have suggested that soft drinks have displaced milk and fruit juice in the diets of children and adolescents, particularly when there is a high level of soft drink consumption (Harnack, Stang, & Story, 1999). Grimm, Harnack, and Story (2004) found the availability of soft drinks both at home and in school vending machines strongly associated with soft drink consumption. In May 2006, the soft drink industry announced a step toward self-regulation by limiting the sale of sugary drinks in school vending machines (Mayer, 2006).

Potential benefits of reduced soft drink consumption were shown in one study in which lower intake over 12 months was associated with lower overweight and obesity prevalence (James, Thomas, Cavan, & Kerr, 2004). Wiecha, Finkelstein, Troped, Fragula, and Peterson (2006) looked at where youth obtained sugar-sweetened beverages and found that the frequency or number of items students purchased from school vending machines was directly associated with sugar-sweetened beverage purchase and intake. Sugar-sweetened

beverages were purchased more often than any other type of item. These findings suggest that school vending machines contributed to overall sugar-sweetened beverage intake.

Advertising Foods of Low Nutrient Density

The SHPSS report found that schools allowed food promotion or advertising to students (Wechsler et al., 2001). Of schools surveyed, 37% allowed advertising by the soft drink company in the building, 28% allowed advertising on school grounds, and 23% allowed promotion of products through coupons (Wechsler et al., 2001). A British study looked at the influence of advertising of soft drinks on children's consumption patterns and found a strong relationship between soft drinks consumed and advertisements the children could recall (Hitchings & Moynihan, 1998). Probart, McDonnell, Bailey-Davis, and Weirich (2006) found a negative association between number of soft drink advertisement locations in the district and participation in school lunch. The study further found widespread existence of advertisements for soft drinks on high school campuses. Because young children are unduly influenced, the American Psychological Association Task Force on Advertising and Children recommended that advertising in all forms be restricted in school environments serving children eight years old and under (American Psychological Association, 2004).

A la Carte Sales

School foodservice programs need to operate at a profit or a break-even level because strains on education budgets limit the ability of school districts to subsidize meal programs from the general fund (Decker, Mulheirn, Sluder, & Watford, 1992; Stainbrook, 1991) and school foodservice directors need to achieve program goals within a limited budget (Hwang & Sneed, 2004). A number of school foodservice programs operate at a deficit (March & Gould, 2001). Pannell-Martin and Applebaum (1999) noted challenges foodservice directors

face in remaining self-supporting as expenses rise faster than reimbursement rates. Experiencing decreasing revenue from meal programs, foodservice directors depend on sales from a la carte lines to maintain a balanced budget.

Researchers found markedly different intakes of fruit and vegetables as well as fat and saturated fat for students enrolled in schools with a la carte programs compared to students enrolled in schools without a la carte programs (Kubik, Lytle, Hannan, Perry, & Story, 2003). Schools with no a la carte program reported intakes meeting or close to dietary recommendations, whereas schools with an a la carte program reported lower intakes of fruit and vegetables and a higher percentage of calories from fat and saturated fat (Kubik et al., 2003).

School Stores and Vending Machines

The second School Nutrition Dietary Assessment study found 76% of high schools, 55% of middle schools, and 15% of elementary schools reported having vending machines; and 41% of high schools, 35% of middle schools, and 9% of elementary school officials had school stores or snack bars (Fox et al., 2004). The findings of Kubik et al. (2003) suggest that students with access to vending machines at school choose low-nutrient snacks in place of fruit.

Food as Reward or Punishment

In a study of foodservice directors, the lack of administrator and teacher support was cited as a barrier to implementing a policy concerning the use of food as a reward or punishment (Barratt, Cross, Mattfeldt-Beman, & Katz, 2004). Kubik, Lytle, and Story's (2005) survey of middle school teachers noted half the respondents believed that most teachers used food as a student reward or incentive. Kohn (1994) questioned the use of

rewards as a typical practice in classrooms in the United States. The offer of rewards can elicit temporary compliance but are not effective at helping children become responsible people or self-directed learners (Kohn, 1994). Kohn indicated people offered a reward for performing a task will generally pick the easiest task to perform. By contrast, children who are not offered a reward are inclined to pick tasks that are just beyond their current level of ability. The use of food as a reward is a questionable practice not only nutritionally but also educationally.

Fundraisers

Fundraisers with food are prevalent during the school day, during meal hours, and after school. Fundraisers in schools support curricular, co-curricular, and extracurricular activities. Fundraisers also take the form of promoting and advertising to children. Richards, Darling, and Reeder (2005) examined school participation in sponsorship, incentive, and fundraising and described potential health implications. Findings indicated that most schools (83% of primary and 85% of secondary) were involved in some sort of sponsorship, incentive, or fundraising initiative, some of which had the potential to have a negative impact on the health of students. Some partnerships delivered positive health messages, but others were linked to products or activities potentially harmful to health. Kubik et al. (2005) found that one fourth of teachers and 40% of parents agreed selling low-nutrient foods as school fundraisers was acceptable because it generated revenue for school programs and activities at the middle school.

An article in *Candy Industry* ("State's Wellness," 2006) noted that executives in the candy industry lobbied the Pennsylvania legislature to clarify wellness policy laws. A Wolfgang Candy executive stated one side of the issue: parents have the right to conduct

fundraising efforts involving candy, baked goods, or snacks. Wolfgang Candy's principle revenue channel is school fundraising.

Nutrition Education

Allensworth and Kolbe (1987) suggested that schools could do more than any other public agency in society to help young people become healthy adults. Many researchers consider the availability of foods of minimal nutritional value in schools to be at cross purposes with goals of nutrition education. In addition to nutrition education, schools may affect young people through modeling and enhancing exposure to healthful practices and behaviors. School activities and personnel should demonstrate healthful eating behavior (Story et al., 1996).

Kubik et al. (2003) suggested the school food environment and its influence on dietary behavior extend beyond the dining experience in the lunchroom. Repeated exposure to less healthful food choices throughout the day, such as junk food for classroom rewards, parties, fundraisers, and a la carte sales, is likely to influence food selection outside the school (Story & Neumark-Sztainer, 1999). Kubik et al. (2003) found that adolescents do not compensate for less healthful choices made at school by choosing more healthful foods away from school. Moreover, because adolescents are becoming more autonomous, behavior patterns developed during this period are likely to influence long-term behaviors (Kelder, Perry, Klepp, & Lytle, 1994).

The GAO (2005) report to Congress on competitive foods in schools noted that it was difficult for schools to control the sale of competitive foods because no one person authorizes or sanctions what, where, and when competitive foods are sold. Booster clubs, coaches,

foodservice, principals, student organizations, and teachers sell food at school. The environment is disjointed, unregulated, and harmful to students.

Larson, Story, Wall, and Neumark-Sztainer (2006) found schools have an opportunity to offer interventions to promote calcium intake through nutrition education. The intervention would support self-efficacy by helping students develop strategies to choose calcium-rich foods at home and in social situations.

School Financial Environment

Over the past 30 years, a combination of court rulings and legislation has changed educational governance. These changes have greatly affected financing of public schools. Until 1980, funding for elementary and secondary education was a local matter. States provided some funds for special purposes and guaranteed a funding floor (Timar, 2004).

Since 1980, there has been a shift in the share of funding between restricted (categorical) and unrestricted (general purpose, revenue limited) areas. Measured in constant dollars, unrestricted funding declined, on average, by 8%, while categorical funding increased by 165% in California schools. School districts received, on average, about $355 less per pupil in unrestricted funds today than in 1980 (Timar, 2004). Any support for the foodservice operation would come from the unrestricted or general funds of a school district. Although there are 124 categorical programs, they all fall into 10 categories and offer little unrestricted funds for building principals' discretion. Therefore, vending sales and fundraisers have become important sources of revenue for principals to use for curricular, co-curricular, or extracurricular activities.

School finance in states has shifted from a demand-driven to a supply-side system of funding. Educational funding depends on the availability of state revenue and other tax variables, not on the real cost of providing education in any given district (Timar, 2004).

Functions of Health Committees in Schools

Anticipating that implementing and monitoring health initiatives will be a difficult task, some school districts have employed school health coordinators and established school district health councils (SHC). A school health coordinator manages and integrates all school health policies, programs, activities, and resources for the district. Composed of different segments of the school and community, the SHC provides guidance to the school health coordinator and school administrators on school health activities and rallies support for school health programs. A SHC can help institutionalize health promotion as a fundamental mission of a school district (Wechsler et al., 2004).

French et al. (2002) suggested school-level policy development may be best facilitated through advisory groups or councils. The infrastructure for developing food and nutrition policies is already in place in many schools. About two thirds of states, districts, and schools have a comprehensive tobacco use policy consistent with CDC guidelines (Small et al., 2001). Almost all states, districts, and schools have policies that prohibit use of alcohol, illegal drugs, physical fighting, harassment, and weapon possession (Small et al., 2001). The SHPSS found about two thirds of schools have existing health councils that develop policies or coordinate activities on health issues, typically including school, staff, parents, and community members (Wechsler et al., 2001).

The legislation for the wellness policy calls for a committee to create the wellness policy similar to the health policy committees found in the SHPSS study. The fundamental

difference in the charges of the committees is profound. In the initial charges to a health committee considering tobacco, illegal drugs, or alcohol, society, the school, and parents agree that a behavior is harmful and advocate complete abstinence at school as a policy. The wellness policy has many stakeholders who find the revenue generated from the sale of food essential to maintain their program. Complete abstinence is not the solution to obesity or health issues. Students need appealing food and an example of healthful moderation (Center for Weight & Health, 2007). A reasonable balance between food offered and customer satisfaction preserves the fiscal well being of the foodservice department (Center for Weight & Health, 2007). For school extracurricular activities funded by food sales, alternative revenue sources are needed. School districts have not had experience creating a district-wide policy for stakeholders with financial interest and disagreement about the problem and potential harm.

Administrative Support for Wellness Policies

Administrators developing a wellness policy start the process with a complicated and difficult situation. Folded into the difficult start, the normal process of change with managerial receptivity to a new policy acts as an important predictor for successful policy implementation (Stevens, 1980). Other features predicting successful implementation include perceived emphasis from top management, organizational size, work overload, and perception of importance of performance for promotion (Stevens, 1980). Fung (1992) noted educational change is not a single event but a process characterized by predictable steps: awareness, attitude formation, adoption, adaptation, action, and application. Seymour (1993) found difficulty in implementing quality management in education. Educators believed quality assurance tasks applied to the foodservice staff and custodians rather than themselves

(Seymour, 1993). Further, administration commitment did not translate into strategies that were both political and practical for implementation. With the wellness plan driven by the need to stay in the National School Lunch Program, educators could perceive this policy, as they did quality management, as not applicable to their primary purpose of education.

Although needs arise in school districts for unrestricted funds for use by principals, coaches, parent groups, and students, some school districts have enacted nutritional guidelines for beverages sold during the school day to improve the school environment. Appleton, Wisconsin was one of the first districts to establish a beverage policy. The New York City Department of Education (June, 2003), Los Angeles Unified School District (January, 2004), and School District of Philadelphia (June, 2004) adopted nutritional goals for the sale and use of food and beverage policies for all schools (McKinney & Thompson, 2005).

Key Elements of the Wellness Policy

The Child Nutrition and WIC Reauthorization Act of 2004 established the framework of the wellness policy. Each school district determines the content of the plan. Michigan Action for Healthy Kids (n.d.) developed a benchmarking tool, the Healthy School Action Tool, for developing wellness plans, grading present plans, and completing yearly assessment goals. Completing the tool each year provides the school district with information about each school's progress toward a healthier environment. Other useful self-assessment tools for wellness implementation include the *School Health Index for Physical Activity, Healthy Eating, and a Tobacco-Free Lifestyle: A Self-Assessment and Planning Guide* from the Centers for Disease Control and Prevention (HHS CDC, 2002), and the *Changing the Scene:*

Healthy School Nutrition Environment Improvement Checklist from the U.S. Department of Agriculture, Food and Nutrition Service's Team Nutrition (USDA, 2000).

Results of Early Intervention Programs

Results of the Teens Eating for Energy and Nutrition at School (TEENS) intervention study offered a mixed picture of environmental-level results (Lytle et al., 2006). The study intervention included classroom, family, school policy, and foodservice components. A similar intervention is possible with local school wellness policies. Researchers noted an important finding suggesting that school foodservice can offer healthier foods items for a la carte, and if provided with enough healthful, affordable, and appealing choices, students will purchase them. During the component of intervention in a la carte, researchers learned that it is important for students and staff to taste test new products. If foodservice workers perceived the lower fat foods did not taste good, they resisted ordering the product. Researchers also learned that foodservice workers underestimated the effect of pricing on student choice. Training programs related to reducing the price of healthier choices was included in the intervention.

Researchers noted no intervention effect with the food stocked on home shelves (Lytle et al., 2006). Researchers noted it has been difficult to design school-based interventions linked to the family that have the ability to show change.

A pilot study documented that school cafeteria and a la carte line changes acceptable to staff and students can be implemented in the short term (Cullen et al., 2007). Vending changes proved difficult. It was further noted that greater increases in fruit consumption compared to vegetable consumption were achieved with the intervention (Cullen et al., 2007).

In early 2006, researchers evaluated the progress of schools in developing local wellness policies in Virginia (Serrano et al., 2007). Researchers found only 31% of School Health Advisory Board membership met the criteria established by the Child Nutrition and WIC Reauthorization Act of 2004 by including one parent, one student, one school nutrition staff member, one community member, one school administrator, and one school board member. Over 80% of school divisions conducted a needs assessment on some level in developing their wellness policy. Most school foodservice directors that responded to the survey were extremely ambitious in setting goals, suggesting that they used the legislation and mandate as a springboard for making improvements and changes in the school health environment.

Two pilot studies assessed the impact of the implementation of nutrition standards for competitive foods in California (Center for Weight & Health, 2007). Initially, researchers found school administrators had little idea of how much money they were making with competitive food and beverage sales. It appeared that the implementation of nutrition standards for competitive foods and beverages benefited schools financially. The study found that students bought less competitive foods but purchased more meals. The increased meal participation was noted in both breakfast and lunch meals. To marginalize a la carte food, schools made major improvements in their school meal program (Center for Weight & Health, 2007).

Theoretical Framework of the Complexity Theory

Organizations are seen as complex evolving systems, co-evolving within a social "ecosystem." Complexity theory builds on and enriches systems theory (Beer, 1980) by

bringing out additional characteristics of complex systems and emphasizing interrelationship and interdependence.

The first principal of complexity theory is connectivity and interdependence (Middleton-Kelly, 2003). Complex behavior arises from the interrelationship, interaction, and inter-connectivity of elements within a system and between a system and its environment. Complexity theory does not argue for increasing interconnectivity because high connectivity implies a high degree of interdependence. A high degree of interdependence may not always have beneficial effects throughout the system. When one entity tries to improve its performance, this change may result in a worsening condition for others. Each improvement in one entity may result in an associated cost for other entities within the same system.

Another aspect of complex systems is that they are multi-dimensional and all the dimensions interact and influence each other. Development and expansion of influence through an ecosystem depends on the degree of connectivity and interdependence. Connectivity may be formal or informal, designed or un-designed, implicit or explicit. It is the degree of connectivity that determines the network of relationships and the transfer of information and knowledge. It is an essential element in the feedback process.

A second concept of complexity theory is co-evolving ecosystems (Middleton-Kelly, 2003). Each organization is a fully participating agent, which both influences and is influenced by the social ecosystem made up of all related businesses, consumers, and suppliers, as well as economic, cultural, and legal institutions. The notion of co-evolution is one of empowerment. Each entity's actions is felt through the web of interrelationships and affect the social ecosystem. Co-evolution also invites the notion of responsibility. Once the

ecosystem is affected, it will in turn affect the entities within the system. A complex co-evolving ecosystem is one of intricate and multiple intertwined interactions and relationships and of multi-directional influences and links. Food manufacturers have experienced requests for many new products to meet the needs of varying school district wellness policies.

A third concept of complexity theory is dissipative structures, which are ways in which open systems exchange energy, matter, or information with their environment and which when pushed "far-from-equilibrium" create new structures (Middleton-Kelly, 2003). When a social entity is faced with a constraint, it finds new ways of operating, because away-from-equilibrium systems are forced to experiment, and this exploration helps them discover and create new patterns of relationships and different structures. Faced with restrictions on fundraising, principals will need to find new ways to generate funds without food. Similarly, teachers will need to find ways to reward students without food.

A fourth concept of complexity suggests that to survive and thrive an entity needs to explore its possibilities and generate variety (Middleton-Kelly, 2003). Any strategy can be optimal under only certain conditions, and when conditions change, the strategy may no longer be optimal. To survive, an organization needs to be constantly scanning the market and trying different strategies. An organization with flexible adaptation also requires new connections or new ways of seeing things. Federal and state laws regulate schools. The Department of Education regulates curriculum while the Department of Agriculture regulates school meals. The extensive, and at times competing, regulations make it challenging for schools to be flexible.

A fifth concept of complexity is feedback (Middleton-Kelly, 2003). Positive feedback (reinforces) drives change, and negative feedback (balancing, moderating, or dampening)

maintains stability in a system. Co-evolution may also depend on reciprocal feedback influences between entities. An important question to consider is how the degree of connectivity and feedback influences co-evolution. It also is important to understand how the structure of an ecosystem affects co-evolution.

A sixth concept of complexity is self-organization, or the emergence and creation of a new order (Middleton-Kelly, 2003). Self-organization is when natural selection and spontaneous emergence or order occurs in a changing system. Emergence is related to the concept of the "whole." The system might need to be considered as a complete and interacting whole rather than separate elements. Emergence is the process that creates new order together with self-organization. Emergence is the transition from local rules or principles of interaction between individual components or agents to global principles or states encompassing the entire collection of agents. The development of school wellness committees to develop, implement, and monitor school wellness policy is an example of self-organization in schools. The logic of complexity suggests that learning and the generation and sharing of knowledge need to be facilitated by providing the appropriate socio-cultural and technical conditions to support connectivity and interdependence and to facilitate emergence and self-organization. The latter two characteristics in particular are often blocked or restricted by complicated authorization procedures (Middleton-Kelly, 2003).

Considerable attention is focused on the rising childhood obesity rate in this country. Schools are considered a key part of the solution to the problem. By legislation, schools have been handed the opportunity to develop their own plan to address obesity. Prior research noted that nutrition and physical fitness problems in schools are longstanding and multifaceted, and schools have limited experience in dealing with nutrition issues.

Legislators do not know how the process will work or if it will provide the outcome they desire. Thus, a need is created for the evaluation and understanding of the process of wellness policy development in public schools.

CHAPTER III. METHODS

The purpose of this study was to examine the process of wellness policy development in school districts. The research process consisted of three phases:

1. Determine each state's regulatory and legislative environment for wellness policy development in school districts;
2. Examine school foodservice directors' perceptions of the process of wellness policy development in selected school districts; and
3. Use emerging themes and topics from Phase 2 to develop a questionnaire to survey foodservice directors in all USDA regions to establish comparable experiences and examine beliefs about the wellness policy.

Before data collection, the Iowa State University Institutional Review Board (IRB) reviewed and approved the study protocol and research questionnaires developed for this study (Appendix A and B). Table 2 shows a summary of the three phases for the research project. This chapter presents a detailed description of the methods used in the three phases.

Phase 1. Wellness Policy Regulatory and Legislative Environment

In Phase 1 of the study, each state's school nutrition legislation, regulations, and training were evaluated to determine the environment for wellness policy development. The criteria used to judge the environment were the nutrition standards of the USDA's *Healthier U.S. School Challenge* (USDA, 2004) summarized in Figure 1. Sources of data were the School Nutrition Association's (SNA) Governmental Affairs Office database of each state's regulations and legislation. In addition, information from the *School Foods Report Card* (Center for Science and the Public Interest, 2006), *State Competitive Food Policies* (USDA,

Table 2. Summary of Study Design for the Three Study Phases

Phase 1. State wellness policy environment
- Developed assessment for determining strong and weak wellness policy environments
- Examined database for wellness laws, regulations, policy development training, and policy templates
- Sorted states by strong and weak environments

Phase 2. Process of development of the school wellness policy: A qualitative approach
- Sample: 21 school districts' foodservice directors, with representation from each of the seven USDA regions
- Interview form: Open-ended form to explore the process of the Wellness Policy development in school districts (Appendix C)
- Data collection method: Telephone interviews in January and February 2007
- Analysis of responses to interview transcript: Memos, themes, connecting strategies

Phase 3. Process of the formation of the school wellness policy: A quantitative approach
- Sample: 847 school district foodservice directors
- Questionnaire: Developed survey based on themes found in Phase 2 (Appendix D)
- Data collection method: Web and mail survey in April 2007
- Analysis of responses to the questionnaire:
  - Descriptive statistics (mean, standard deviation, and frequency)
  - Cronbach's alpha with item-total analysis was completed on attitude, supporting factors, and barriers to wellness development questions
  - Correlations tested relationships among variables with ANOVA and Tukey's HSD post hoc test

State	Guideline 35% fat (1 point)	Guideline 10% saturated fat (1 point)	Guideline 35% sugar by weight (1 point)	Beverage nutrition standard (1 point)	Beverage portion size (1 point)	Limit on calories in portion to 200 calories (1 point)	Guidelines on time food can be sold (1 point)	Location on campus for which policies apply (1 point)	Training on Wellness Policy development (1 point)	Policy template (1 point)	Score
AL											
AK											
AR											

Figure 1. Evaluation of State Policies Using Criteria of the *Healthier U.S. School Challenge*

2002), and *Childhood Obesity-2005 Update and Overview of Policy Options* (NCSL, 2006) was used to determine the legislative environments in 2004 and 2006.

Each state child nutrition program website was checked for evidence of wellness policy guidelines and templates developed by states for district use. Further review of each state child nutrition website was done to determine training in wellness policy requirements and policy development. Nutritional standards on the website were compared to the nutrition standards of the USDA *Healthier U.S. School Challenge* (USDA, 2004). Additional evidence of training and wellness policy templates provided by each state was recorded. Each state's regulatory and legislative environment had a rank based on 10 key considerations for individual foods not served in federal meal programs: (a) nutrition standards for total fat, (b) nutrition standards for saturated fat, (c) nutrition standards for sugar, (d) nutrition standards for beverages, (e) portion size standards for beverages, (f) portion size limit by calories, (g) time during the school day in which policies apply, (h) location(s) on campus to which policies apply, (i) availability of model wellness policy templates, and (j) training available in wellness policy development. Each guideline was assigned one point with a maximum score of 10 points. States scoring greater than five points were categorized as strong environments for wellness policy development and those with five points or fewer were categorized as weak environments.

A review of the nutrition standards for Mississippi and Louisiana indicated that these states did not allow any a la carte sales except seconds after a full meal was sold. A la carte food would be only food available in the school meal program; the program was scored one point for guidelines for fat, saturated fat, and beverage nutrition standard. The nutrition guidelines for the school lunch program, which determine the foods sold a la carte in

Mississippi and Louisiana, require 30% fat and 10% saturated fat. Additionally, the school meal guidelines for FMNV established a beverage guidelines in these states (School Lunch Programs, 2005). However, the review of the website for Louisiana indicated a conflict of information with the *School Foods Report Card* (Center for Science and the Public Interest, 2006) and *State Competitive Food Policies* (USDA, 2002) for nutrition standards. The state child nutrition program website information for nutrition guidelines were used, and the a la carte points for fat, saturated fat, and beverage nutrition standards was dropped for Louisiana.

One point was given for training if the state website noted meetings or training materials either explaining the requirements of the policy or noting more in-depth training on committee formation and work. States offered guidance in writing policy either with fill-in-the-blank templates or a selection of best practices for implementation. One point was given for either type of policy guide.

States were rated for wellness environment in 2004 and 2006. States were sorted in descending order by wellness points. Breakpoints in data were found. In 2004, a score of zero was a data breakpoint. In 2006, a score of three was a breakpoint. States with low scores in 2004 and 2006 were compared. Eleven states were randomly drawn from the list of states scoring low in both years. The 11 drawn states were the weak environment states.

States ranking with high scores showed a data breakpoint at three in 2004, and five at 2006. States rated as strong in 2004 were compared to states rated as strong in 2006. Seven states were rated with strong wellness environments both years. Four other states were randomly drawn from the high scoring states resulting in 11 states.

Phase 2. Process of Development of the School Wellness Policy: A Qualitative Approach

Target Population

All school foodservice directors in public school districts were the target population. In this study, all sizes of school districts were included.

Sampling Frame

Public school districts in all USDA, Food and Nutrition Service regions (Northeast [NER], Mid-Atlantic [MAR], Southeast [SER], Midwest [MWR], Southwest [SWR], Mountain Plains [MPR], and Western [WR]) were included. After the states were ranked for strong or weak wellness policy environments, states from each region were selected. Eleven of the districts were from states with strong wellness policy environments and 11 were from states with weak wellness policy environments. State directors were contacted in selected states and asked for names of foodservice directors involved in the development of school district wellness policies in their state. Foodservice directors attending the SNA Leadership Meeting Fall 2006 also were utilized as the participant from some states.

Foodservice directors in each geographic region and selected states were called, and their participation in the study requested until adequate participants were recruited ($N = 21$). A script for recruiting participants was utilized (Appendix E).

Survey Mode

A telephone survey was utilized in this phase of the study (Appendix C). The survey started with questions about the wellness policy committee development and working process; then questions about barriers and support for the wellness policy were asked. The status of the wellness policy was included in questions, and the survey finished with

demographic questions (Appendix C). A survey script was used to guide the interview process (Appendix F). Districts not in the National School Lunch Program were omitted from the study.

Interview Form

An interview form (Appendix C) was developed to explore the process of the wellness policy development in school districts. The interview form included open-ended questions to explore committee formation, committee meetings, group decision making, level of administrative and school board support, policy formation, and written policy formation. In addition, knowledge, motivational factors, belief systems, and key elements of wellness policies developed were explored.

Pilot Study

The interview form was pre-tested for content validity with four foodservice directors or child nutrition management professionals who did not participate in the study. Directors were classmates from Iowa State University's Child Nutrition Leadership Academy with expertise in research design as well as familiarity with wellness policy formation. Experts identified the content validity of the interview questions, and necessary revisions were made to the interview form. The revised interview form (Appendix C) was pilot tested in a telephone interview with one non-foodservice participant and two foodservice directors to test the needed time for the interview and to review clarity of questions and instructions. Questions were revised before initiating the research. Three pilot interviews were conducted before the research interviews to improve the skill level of the interviewer and to validate the expected time for the interview.

Data Collection

Phase 2 of data collection involved telephone interviews with 21 district school foodservice directors. Interviews were conducted during January 2007 and February 2007 and were digitally recorded. A small tape recorder was attached to the telephone and the phone placed on speaker mode to record the interview. Participants were assured of confidentiality and that all results would be reported as group data.

The same interviewer conducted all interviews. The interviewer, before interviews, reviewed procedures in the logistics of the interview process, procedural requirements, IRB concerns, protection of human participants, a review and discussion of the interview questionnaire, keys to interview success, and the proper use of the digital recording equipment. In addition, the interviewer obtained a Human Participants Training Certificate through the U.S. National Institutes of Health.

The interviewer called participants and used a standard script (Appendix F). The interviewer identified herself as a researcher from Iowa State University conducting research on the school wellness policy and explained her personal connection to the project. The interviewer scheduled an interview time (Appendix E) and then e-mailed a packet of information to the foodservice director. The packet contained a cover letter from the principal investigator (Appendix G), an informed consent document (Appendix H), interview form (Appendix C), and a note reminding participants of the appointment date and time.

The interviewer called each participant at the scheduled appointment time. The interview was conducted using a standardized script (Appendix F). Informed consent was reviewed with the participant and received before starting the interview (Appendix H). The signed informed consent document was retained on file. At the close of the interview,

foodservice directors received thanks for their participation, time, and effort. Interviews took approximately 30 minutes. The participants were offered results of the study. In addition, participants received a handwritten thank-you letter. A summary of contacts is listed in Table 3.

Table 3. Summary of Contacts Made in Phase 2

Contact method	Contact 1 Week 1	Contact 2 Week 1	Contact 3 Week 2 and 3	Contact 4 Week 4
Phone call	Recruit		Interview	
E-mail		Confirmation packet		
Letter				Thank you

Data Analysis

Six steps recommended by Creswell (2003) for qualitative data analysis were used: Step 1—Organize and prepare data for analysis; Step 2—Read through all data; Step 3—Begin detailed analysis with a coding process; Step 4—Use a coding process to generate a description of the study by categories or themes for analysis; Step 5—Advance how the description and themes would be represented in the qualitative narrative; and Step 6—Interpret meaning of the data. Study reliability was accomplished by having two foodservice directors read transcripts independently to review categorized information and themes. Four CNP students met one weekend to compile the foodservice directors' database. During this weekend, CNP students read transcripts and confirmed categorized information and theming summaries. The multiple themes were compared for study reliability.

Phase 3. Process of the Formation of the School Wellness Policy: A Quantitative Approach

Target Population

School foodservice directors in medium-sized (2,500 to 9,999) or larger public school districts were the target population. Most school districts with fewer than 2,500 students did not have e-mail addresses noted for foodservice directors in available databases. They were omitted from the study.

Sampling Frame

Dillman (2007) noted that for a 95% level of confidence with a ±5% sampling error, and an 80/20 split, 232 completed surveys are needed. With an expected survey return rate for foodservice directors between 28% and 33% (Conklin, Cranage, & Lambert, 2005; Rainville, Choi, & Brown, 2005), it was determined that 773 surveys were needed for an adequate sample size.

A random national sample of foodservice directors in public school districts was drawn from the *Digest for Educational Statistics* (National Center of Educational Statistics, 2004) list of school districts. The *Digest for Educational Statistics* reported that there were 15,990 public school districts in 2004. Of those, 12,326 districts had enrollments with fewer than 2,499 students or no students were reported. A sample of 3,924 medium size or larger school districts was used. The sample was a stratified random sample selected from 3,077 medium-sized school districts, 717 large districts, and 130 extra large districts. Child Nutrition Program graduate students developed a national database of foodservice directors with e-mails. E-mail addresses were available for approximately half of the 15,990 districts with small districts having the least representation. Some state agencies provided e-mail

addresses for the school food authority, which may or may not have been the foodservice director. A sample of 858 foodservice directors with e-mail addresses resulted. Addresses were undeliverable for 141 participants, leaving a sample size of 717 potential participants. There were not adequate participants as previously determined in the methods, therefore foodservice directors drawn in the original sample without e-mails were contacted by mail.

The original 988 random sample of foodservice directors from medium, large, and extra large size districts included 130 foodservice directors without e-mails. They were mailed surveys to achieve the previously determined sample size. The total sampling frame of e-mail and mail participants was 847 foodservice directors.

Questionnaire

A questionnaire was developed based on themes and connecting strategies found in the second phase of this research and addressed foodservice directors' experience in development of their district's wellness policy (Appendix D). In addition, the survey focused on belief systems of the foodservice directors. The questionnaire asked about foodservice directors' underlying beliefs regarding the wellness policy and if it will help children's nutritional and physical health. Barriers and support for the wellness policy were asked related to implementation of the wellness policy. In addition, the following demographic information about the foodservice director was obtained: educational level, educational background, and additional credentials. School district characteristics obtained included: average daily participation, percentage of free and reduced meal applications, school district enrollment, state, USDA region, and type of management. The survey had an estimated completion time of 10 minutes. Participants were sent an e-mail inviting them to participate in the research and explaining that their participation was voluntary (Appendix I). The e-mail

also stated that data would be reported as group data. The IRB of Iowa State University approved the research protocol and questionnaire before data collection (Appendix B).

Pilot Study

The questionnaire was pre-tested with three foodservice directors who did not participate in the study. The foodservice directors included experts in research design and familiarity with wellness policy formation. Experts identified the content validity of questions. Revisions occurred before pilot testing the questionnaire. During the pilot test the survey was analyzed for reliability, clarity of questions, and time to respond to survey. Necessary revisions were completed before initiating the research.

Data Collection

An introduction e-mail (Appendix I) and web survey were e-mailed to a sample of 717 randomly selected foodservice directors using SurveyMonkey.com. Three days after the original e-mail, an e-mail with a cover letter (Appendix J) from the principal investigator accompanied the survey (Appendix D). E-mails included an automatic notification to the sender. One week after the initial mailing, a follow-up e-mail was sent to all survey recipients thanking them for responding or reminding them to return the survey (Appendix K). One week after e-mailing the thank-you note, a second survey was sent to each non-respondent (Appendix L). One week after e-mailing the second survey to non-respondents, a third survey (Appendix M) was e-mailed to each non-respondent (Dillman, 2007). The same survey, letters, and notes were mailed to directors with only mailing addresses. The letters were mailed three days before e-mail notification. This procedure was done to have a similar timeframe for participant contacts. A summary of contacts are presented in Table 4.

Table 4. Summary of Contacts Made in Phase 3

Contact method	Contact 1 Week 1	Contact 2 Week 1	Contact 3 Week 2	Contact 4 Week 3	Contact 5 Week 4
E-mail contact	X	X	X	X	X
Letter contact	X	X	X	X	X

Data Analysis

Descriptive statistics (means, standard deviations, and frequencies) were used to examine survey results. Methodology included exploratory factor analysis of the study variables using the principal components procedure. The criterion for selection was determined by a minimum eigenvalue of one and the selected factors were rotated by the varimax procedure. Subdimensions were tested for reliability with Cronbach alpha. Correlations were completed to test the relationships among variables. Correlations were tested using an ANOVA with Tukey's HSD post hoc test. The relationships among variables tested included attitudes, barriers, and support as dependent latent variables. Independent variables tested included certification, enrollment, level of education, legislative environment, socioeconomic status (SES), and USDA region. Survey data were analyzed using SPSS version 13 (SPSS Version 13.0 for Windows, SPSS, Inc, Chicago, IL).

The series of questions about wellness components in place appeared to cause confusion. Foodservice directors marked the survey asking about wellness components in place before 2004 then left blank responses after 2004. It seems unlikely foodservice directors would discontinue wellness policies just as they were developing a wellness plan. Participants indicating they had components in place before 2004 were added to participants that developed wellness components after 2004.

CHAPTER IV. RESULTS AND DISCUSSION

Introduction

This chapter presents results of the three study phases and relates findings to the theoretical framework of the study. The first section presents the review of the environment for wellness policy development in 50 states, including the evaluation of each state's legislative and regulatory environment for school foodservice. The evaluation also considers the support offered schools in the development of the wellness policy by each state's Department of Education. The second section of this chapter presents the results of the qualitative study with district foodservice directors evaluating the wellness policy committee formation, foodservice directors' beliefs and attitudes about the wellness policy, perceptions of supports and barriers, and status of the wellness policy in the participants' districts. The third section presents the results of a national quantitative study, which was developed based on findings from Phase 2. The fourth section relates results of this wellness policy research to complexity theory.

Phase 1. Evaluation of the Environment for Wellness Policy Development

All 50 states were reviewed for their environment for wellness policy formation in 2004, just as the wellness policy legislation was written, and again in 2006, immediately before the mandated date for implementation of the wellness policy. In 2004, 30 states were given a score of zero. Only Alaska was given a score of zero in 2006. States were evaluated for legislation and regulations of school meals, template availability, and training for wellness. In 2004, only three states, California, Tennessee, and Mississippi, scored five or

greater to meet the criteria for a state with a strong environment for wellness policy development (Table 5).

In 2006, 22 states scored five or greater to meet the criteria for a state with a strong environment for wellness policy development (Table 6). Selected states with a weak legislative environment in 2004 were compared to the states in 2006 receiving the lowest scores (Table 7). The data breakpoint in 2006 was between two and three. There were 20 states with low scores in 2006 from which 11 states were randomly drawn from a hat (DE, IA, KS, MA, MI, MN, MO, NH, OR, WA, and WI). The random drawing represented five of the seven USDA, Food and Nutrition services regions (MA, MW, MP, NE, and W). No other USDA region was represented among the states not selected.

To determine a method to select states with strong environments to study in Phase 2, states with a high score in 2004 and 2006 were compared. Results are noted in Table 8. There were 11 states that scored three points or higher, the data breakpoint, in 2004. The data breakpoint in 2006 was five points or higher. Seven of the high-scoring 2004 states scored five or greater in 2006 (LA, CA, TN, MS, WV, IL, and TX). Four additional states representing additional USDA regions were randomly drawn. Altogether, the states selected were AR, AZ, CA, CT, IL, LA, MS, OK, TX, TN, and WV, which represents six of the seven USDA regions (MAR, MWR, NER, SER, SWR, and WR). No other USDA region was represented in the remaining high-scoring 2006 states.

Table 5. Evaluation of State Policies in 2004 using Criteria of *Healthier U.S. School Challenge* (Scores in Descending Order)

State	Guideline 35% fat *(1 point)*	Guideline 10% sat-urated fat *(1 point)*	Guideline 35% sugar by weight *(1 point)*	Beverage nutrition standard *(1 point)*	Beverage portion size *(1 point)*	200 calories/ portion *(1 point)*	Guideline on time food can be sold *(1 point)*	Campus locations where policies apply *(1 point)*	Wellness Policy formation training *(1 point)*	Policy template *(1 point)*	USDA region	Score
CA	1	1	1	1			1	1			WR	6
TN	1	1	1	1			1	1			SER	6
MS	1	1	1				1	1			SER	5
TX				1	1		1	1			SWR	4
HI				1			1	1			WR	3
IL				1			1	1			MWR	3
LA				1			1	1			SWR	3
ME						1	1	1			NER	3
NY				1			1	1			NER	3
VA				1			1	1			MAR	3
WV				1			1	1				3
AL							1	1				2
CO							1	1				2
CT							1	1				2
FL							1	1				2
GA							1	1				2
KY							1	1				2
MD							1	1				2
NE							1	1				2
NJ							1	1				2
NC							1					1
AK												0
AZ												0
AR												0
DE												0

Table 5. (continued)

State	Guideline 35% fat *(1 point)*	Guideline 10% sat-urated fat *(1 point)*	Guideline 35% sugar by weight *(1 point)*	Beverage nutrition standard *(1 point)*	Beverage portion size *(1 point)*	200 calories/ portion *(1 point)*	Guideline on time food can be sold *(1 point)*	Campus locations where polices apply *(1 point)*	Wellness Policy formation training *(1 point)*	Policy guide *(1 point)*	USDA region	Score
DC												0
ID												0
IN												0
IA												0
KS												0
MA												0
MI												0
MN												0
MO												0
MT												0
NV												0
NH												0
NM												0
ND												0
OH												0
OK												0
PA											MAR	0
OR											WR	0
RI											NER	0
SC											SER	0
SD											MPR	0
UT											MPR	0
VT											NER	0
WA											WR	0
WI											MWR	0
WY											MPR	0

Table 6. Evaluation of State Policies in 2006 using Criteria of *Healthier U.S. School Challenge*-Scores in Descending Order

State	Guideline 35% fat *(1 point)*	Guideline 10% sat-urated fat *(1 point)*	Guideline 35% sugar by weight *(1 point)*	Beverage nutrition standard *(1 point)*	Beverage portion size *(1 point)*	200 calories/ portion *(1 point)*	Guideline on time food can be sold *(1 point)*	Campus locations where policies apply *(1 point)*	Wellness Policy formation training *(1 point)*	Policy guide *(1 point)*	USDA region	Score
AZ	1	1	1	1	1	0	1	1	1	1	WR	9
KY	1	1	1	1	1	0	1	1	1	1	SER	9
LA	1	1	0	1	1	1	1	1	1	1	SER	9
AL	1	0	1	1	1	0	1	1	1	1	SER	8
AR	1	1	1	1	0	0	1	1	1	1	SWR	8
CA	1	1	1	1	0	1	1	1	0	1	WR	8
NJ	1	1	0	1	1	0	1	1	1	1	WR	8
NM	1	1	1	1	1	0	0	1	1	1	MAR	8
NV	1	1	1	0	1	0	1	1	1	1	SWR	8
PA	1	1	1	1	0	1	1	0	1	1	MAR	8
SC	1	1	1	1	1	0	1	1	1	0		8
TN	1	1	1	1	0	0	1	1	1	1		8
MS	1	1	1	0	0	0	1	1	1	1		7
RI	1	1	0	1	0	0	1	1	1	1		7
WV	1	1	0	1	0	0	1	1	1	1		7
DC	1	1	1	1	0	0	1	1	0	0		6
IN	1	1	1	1	1	0	0	0	1	0		6
MD	1	1	1	0	0	0	1	1	1	0		6
CT	0	0	0	1	1	0	1	1	1	0		5
IL	0	0	0	1	0	0	1	1	1	1		5
OK	0	0	0	1	0	0	1	1	1	1		5
TX	0	0	0	1	1	0	1	1	1	0		5
CO	0	0	0	0	0	0	1	1	1	1		4
HI	0	0	0	0	0	0	1	1	1	1		4
ME	0	0	0	1	0	1	1	1	0	0		4

Table 6. (continued)

State	Guideline 35% fat *(1 point)*	Guideline 10% sat-urated fat *(1 point)*	Guideline 35% sugar by weight *(1 point)*	Beverage nutrition standard *(1 point)*	Beverage portion size *(1 point)*	200 calories/ portion *(1 point)*	Guideline on time food can be sold *(1 point)*	Campus locations where policies apply *(1 point)*	Wellness Policy formation training *(1 point)*	Policy guide *(1 point)*	USDA region	Score
NC	0	0	0	0	0	1	1	1	1	0		4
NY	0	0	0	1	0	0	1	1	1	0		4
VA	0	0	0	1	0	0	1	1	1	0		4
FL	0	0	0	0	0	0	1	1	1	0		3
GA	0	0	0	0	0	0	1	1	1	0		3
NE	0	0	0	0	0	0	0	1	1	1		3
DE	0	0	0	0	0	0	0	0	1	1		2
IA	0	0	0	0	0	0	0	0	1	1		2
ID	0	0	0	0	0	0	0	0	1	1		2
KS	0	0	0	0	0	0	0	0	1	1		2
MI	0	0	0	0	0	0	0	0	1	1		2
MN	0	0	0	0	0	0	0	0	1	1		2
MT	0	0	0	0	0	0	0	0	1	1		2
OR	0	0	0	0	0	0	0	0	1	1		2
SD	0	0	0	0	0	0	0	0	1	1		2
VT	0	0	0	0	0	0	0	0	1	1		2
WI	0	0	0	0	0	0	0	0	1	1	MPR	2
MA	0	0	0	0	0	0	0	0	1	0	MPR	1
MO	0	0	0	0	0	0	0	0	1	0	MPR	1
ND	0	0	0	0	0	0	0	0	1	0	NER	1
NH	0	0	0	0	0	0	0	0	1	0	MPR	1
OH	0	0	0	0	0	0	0	0	1	0	MWR	1
UT	0	0	0	0	0	0	0	0	1	0	MPR	1
WA	0	0	0	0	0	0	0	0	1	0	WR	1
WY	0	0	0	0	0	0	0	0	1	0	MPR	1
AK	0	0	0	0	0	0	0	0	0	0	WR	0

Table 7. Selection of States with Weak Environments for Wellness Policy Formation

State	USDA region	2004 score Low=0	2006 score Low=2 or less	States scoring low in both years	Randomly drawn states
AK		0	0	X	
AZ		0			
AR		0			
DE	MAR	0	2	X	X
DC		0			
ID		0	2	X	
IN		0			
IA	MPR	0	2	X	X
KS	MPR	0	2	X	X
MA	NER	0	1	X	X
MI	MWR	0	2	X	X
MN	MWR	0	2	X	X
MO	MPR	0	1	X	X
MT		0	2	X	
NV		0			
NH	NER	0	1	X	X
NM		0			
ND		0	1	X	
OH		0	1	X	
OK		0			
PA		0			
OR	WR	0	2	X	X
RI		0			
SC		0			
SD		0	2	X	
UT		0	1	X	
VT		0	2	X	
WA	WR	0	1	X	X
WI	MWR	0	2	X	X
WY		0	1	X	

Table 8. Selection of States with Strong Environments for Wellness Policy Formation

State	USDA region	2004 score	2006 Score	States scoring high both years	States scoring 5 or greater 2006	Randomly selected + original high-scoring states
AL		2	8		X	
AR		0	8		X	
AZ		0	9		X	
CA	WR	6	8	X	X	X
CO		2	4			
CT		2	5		X	
DC		0	6		X	
HI		3	4			
IL	MWR	3	5	X	X	X
IN		0	6		X	
KY		2	9		X	
LA	SWR	3	9	X	X	X
MD		2	6		X	
ME	NER	3	4			
MS	SER	5	7	X	X	X
NJ		2	8		X	
NM		0	8		X	
NV		0	8		X	
NY	NER	3	4			
OK		0	5		X	
PA	MAR	0	8		X	
RI	NER	0	7		X	
SC	SER	0	8		X	
TN	SER	6	8	X	X	X
TX	SWR	4	5	X	X	X
VA	MAR	3	4			
WV	MAR	3	7	X	X	X

Phase 2. A Qualitative Evaluation of Wellness Policy Formation and Implementation

Sample Description

Twenty-two states were identified as strong or weak states for wellness environment. Contacts in each of the states were identified from a list of participants at a recent SchoolNutrition Leadership meeting or identified as experts by their state Department of Education. One participant from each state was needed for the survey; 21 participated in a telephone interview. One participant held a doctorate degree, nine held Master's degrees, eight held baccalaureate degrees, one had some college, and one had a high school diploma. The education level was higher than the typical education level of foodservice directors (Giampaoli, Sneed, Cluskey, & Koenig, 2002; Hwang & Sneed, 2004; Youn & Sneed, 2002). Their school district size ranged from 1,000 to 47,000. Three districts had an enrollment between 1,000 and 2,500, seven had enrollments between 2,500 and 5,000, three had enrollments between 5,000 and 10,000, and eight had greater than 10,000 students. School district percentage of free and reduced meal applications on file ranged from a low of 8% to a high of 90% with a mean of 42%. All foodservice directors reported working in self-operated foodservice departments. A summary of results for the telephone interviews is included in Appendix N.

Wellness Committee Membership

In the interview, participants were asked to list members of the district wellness committee. The mean size of the committees equaled 17.5 (SD = 7.7) members. The median committee size equaled 17 members, with the mode equal to 18 committee members. Generally, a chairperson was appointed by school district administration. The chairperson

then invited or received volunteers for the committee. Only seven committees met the membership criteria established by the Act for developing the policy by involving parents, students, representatives of the school food authority, school board members, school administrators, and the public. The groups most frequently missing from committee membership (n = 12) were students and school board members.

The wellness committees clearly had strong representation from school faculty and administration. The most frequently represented groups were foodservice directors (n = 21), parents (n =16), teachers (n = 16), school nurses (n = 15), principals (n = 12), students (n = 10), and school board members (n = 9). The composition of this group was unique. This was the first time key players were together discussing major wellness issues. Only three districts previously reported having a wellness coordinator or committee to address health problems. The committee structure also did not have a history of working with health issues and implementing a non-educational issue in an educational institution. Eleven foodservice directors noted that adequate expertise was available on their committee, whereas 10 foodservice directors noted missing expertise from three areas: medical expertise, administrative/board support, or student/parent involvement.

Wellness Committee Processes

The wellness committees were chaired by a variety of hierarchical and organizational entities. Most frequently, assistant superintendents (n = 7) were the chair. The foodservice director chaired six of the committees, but four of those were with a co-chair. Four of the committee chairs were volunteers to the school district. Interestingly, only one principal chaired a committee, yet most districts stated the principal would be the primary person responsible for implementing the policy.

Directors perceived a bi-modal pattern of interest among wellness committees. Participants were highly involved and motivated or showed minimal interest.

Interviewees reported information and resources were readily available. Foodservice directors reported using materials from several sources. Many reported comparing more than one source and adapting templates to the needs of the district. District foodservice directors reported trying to develop policy buy-in by incorporating current practices. One foodservice director reported a state template had been developed that had an assessment tool and goal setting as part of the program. This format was reported as very useful in long-range implementation. Policy development had no consistent pattern of development, with wellness policy committees reported as the most frequent author of the wellness policies.

Data Gathering

Two thirds (n = 14) of the school district committees either did not evaluate the status of the district or used discussion to evaluate their current wellness status. Many of the school districts discussed the wellness status of their school district and did not establish benchmarks to use for future evaluation. One district used the School Health Index as a self-assessment tool, which covered eight modules, corresponding to the different components of a coordinated school health program: (a) school and health safety; (b) health education; (c) physical education; (d) nutrition services; (e) school health services; (f) counseling, psychological, and social services; (g) staff health promotion; and (h) family and community involvement. Additional methods used included the *Healthy Kids Survey*, State Department of Education surveys, and student BMI levels. When school districts did not evaluate the wellness status or did not measure wellness status with a measurable tool, Kubik et al.'s

(2001) concerns with school staffs' inexperience with nutrition policy development and implementation were validated.

Outreach to the community was limited to the parents and participants on the committee for nine school districts. Four districts tried public outreach through the district website, public meetings, or the newspaper. Pre-existing parent advisory committees were used for a structured feedback loop in two districts. Six school foodservice districts noted minimal community outreach.

Supports and Barriers to Wellness Policy Development and Implementation

A major support of wellness policy development was the federal mandate (n = 10). The second major area of support was concern about the health of students (*n* = 7). The third area of support was the addition of state laws and regulations supporting wellness policies (*n* = 4). No strong or common theme emerged to drive the implementation of the policy.

The major barrier to the development of the wellness policy was competition for time (*n* = 12). The second barrier identified that wellness was not a priority in the school district (n = 8). The third barrier was the need for funds for student activities (*n* = 5). Barriers to implementation appeared similar to those regarding the development of the policy. Competition for time and establishing wellness as a priority appeared to dominate concerns for implementation. Funding for additional physical education also was noted as a concern.

Administrative Support for Wellness Policy

Participants provided examples of administrative support by describing changes in vending foods and other wellness policies made by principals in their district. Highly motivated principals demonstrated support by changing fundraising efforts (*n* = 4) and

changing the offerings in vending machines (n = 5). Others demonstrated support by implementing the entire policy, and others formed wellness teams in their schools.

Superintendents showed support most frequently with verbal support and enforcement of policy. Some superintendents were perceived to not be highly motivated because of more pressing priorities.

Foodservice Directors' Attitudes and Beliefs about Implementation of the Wellness Policy

Enforcement of the wellness policy by school administrators (n = 4) and money to support the program (n = 4) were the most frequently mentioned needs to make implementation of the wellness policy successful. Foodservice directors reported a low to middle priority level (n = 4) of the wellness policy by the community in their district. The two districts reporting high community priority were from the western USDA region.

Foodservice directors believed the wellness policy has changed the foods offered in schools (n = 4). Some of the changes in foods offered were driven by changes in state laws (n = 3). Foodservice directors suggested changes in physical education would be more difficult and require legislative intervention and funding for success. They believed the major change in nutrition policies, due to the wellness policy, would come in vending machines and a la carte foods. Changes in meal programs have occurred over time because of changes in state and federal laws. Directors also believed the establishment of one federal nutrition policy would be helpful to avoid confusion for all entities involved in school meals (n = 2).

Foodservice directors suggested changes brought about by the wellness policy would include more exposure to healthy foods (n = 3). The wellness policy had brought together departments that normally work independently in schools. Foodservice directors indicated

that the wellness policy has raised awareness levels of good nutrition and the need for exercise.

Foodservice directors perceived school personnel's primary responsibility in obesity prevention as modeling a good example of a healthy lifestyle at school (n = 8). In addition to serving as good role models, the foodservice department should offer and encourage healthy food choices. Foodservice directors' believed obesity prevention is a shared responsibility with parents.

Wellness Policy Goals

Foodservice directors indicated wellness policies addressed overarching goals for nutrition education. They reported goals for nutrition education provided for grades kindergarten through 12th that is sequential, corresponds to testing and benchmarks, and is integrated into the core curriculum. The only specific goal noted by foodservice directors for nutrition education, specifically considered students' ability to make informed and educated food choices and select healthy exercise habits. Goals did call for using certified health educators and providing staff development. The framework for the educational goals seemed to be present in wellness goals; however, expertise in identifying what a child needs to learn at different stages was identified by only one wellness plan. One district foodservice director indicated that during implementation it became apparent that no one knew what was being taught about nutrition. Foodservice directors reported the goals for physical education varied from specific minutes of physical education per school day for all grade levels to plans trying to incorporate physical activity into the entire school day.

Foodservice directors reported similar goals for other school-based activities to promote wellness: adequate time for students' meals and consistent health messages for the

entire school day with the elimination or regulation of food for rewards and parties. Foodservice directors reported vending policies as highly variable (n = 18). States with laws and regulations had clear direction for vending in their wellness policies. Other states showed great variation, from vending machines on 24 hours a day to vending machines off only during meal times. Nutrition guidelines for vending machines were also noted as highly variable. States with laws and regulations about vending had wellness policies developed in their states with specific guidelines.

Policies encouraging or recommending nutritious or non-food items for parties were written in wellness policies. Two foodservice directors reported this issue had not been addressed. In seven policies, teachers were encouraged to use non-food rewards. Six policies did not address food as rewards. Foodservice directors reported a policy for food for field trips was not addressed in their wellness policy except if the state law already regulated what was served.

Fundraisers were addressed in wellness policies. Guidance came in three forms: no fundraising during the school day, no fundraisers during meal times, and fundraisers must use foods that follow the nutrition policy or state laws. Policies in four districts did not address fundraisers. Foodservice directors reported most frequently (n = 6) that no policy was developed for meals and snacks brought from home; further principals determined the policy.

Guidelines for school meals follow (at minimum) the federal guidelines. Eight participants indicated further state guidelines were established to regulate meals. The state guidelines generally are a variation of the *Healthier U.S. School Challenge* (USDA, 2004) recommendations. Sales of full meals were generally offered only at elementary schools. Restrictions on frying potatoes and limitations of portion size were reported. Foodservice

directors reported the regular reviews of their program by USDA in SMI and CRI reviews provided assurance that the meals are not less restrictive than the USDA guidelines. Foodservice directors from some states (n = 2) indicated they were having difficulty meeting needed calorie limits with state nutrition laws superimposed on the federal laws.

Wellness policies in some school districts prohibited all a la carte sales (n = 3) or limited a la carte sales to foods served as part of the regular school lunch meal. Other foodservice directors reported a la carte sales were guided by state laws with restrictions on fat, saturated fat, sugar, portion sizes, or calories.

Time and place rules were established through either the wellness policies or state laws for reporting school districts. The definition of time and place varied widely (n = 18).

Implementing and Monitoring the Wellness Policy

Foodservice directors reported the plan for measuring implementation of the wellness policy fell in two categories: either the district had no plan in place yet, or they had an assessment tool or checklist that determined goals that were to be reviewed yearly for progress. Most frequently, foodservice directors did not know who or what position was responsible for implementing the wellness policy (n = 6). The second most frequent answer was the principal at the building level (n = 5).

Various levels of progress in implementing the wellness plan were reported. Directors reported most frequently that the foodservice section of the plan was implemented (n = 8), with five reporting full implementation of all sections of the wellness policy. Planning and training staff in the implementation of the wellness plan was still in progress in school districts.

Phase 3. A National Quantitative Evaluation of Wellness Policy Formation and Implementation

Demographic Description of the Sample

A random national sample of foodservice directors was drawn from public school districts with 2,500 or more enrolled students. The original sample represented 988 public school districts. A sample of 858 foodservice directors with e-mail addresses resulted. One hundred forty-one of the addresses were undeliverable, leaving a sample size of 717 potential participants. In addition, the random sample included 130 foodservice directors without e-mail addresses from medium and larger size districts. The sample without e-mails received mail surveys. The total sampling frame of e-mail and mail participants was 847 foodservice directors. Response rates for other studies using school foodservice directors as the study population were lower than this study, ranging from 28 to 33% (Conklin et al., 2005; Rainville, Choi, & Brown, 2005). Table 9 notes types of contacts and response rates from participants. Not all questions were answered by all respondents; thus, frequency of responses did not always total 363.

About one third of the participants (n = 109) had a graduate degree, and an additional 40.9% (n = 130) held bachelor's degrees (Table 10). Seventy-five percent of the participants

Table 9. Response Rate for Phase 3, Wellness Policy Research

Type of contact	Number of foodservice directors contacted	Returned surveys	
		n	%
E-mail	717	320	44.6
Mail	130	43	33.1
Total	847	363	42.9

had a college education. The education level was higher than the typical education level of foodservice directors (Giampaoli, Sneed, Cluskey, & Koenig, 2002; Hwang & Sneed, 2004; Youn & Sneed, 2002). Over half (n = 166) of the respondents' educational background was in nutrition, over 35% (n = 117) reported a business background, and 26.6% (n = 83) had a background in hotel, restaurant, and institutional management. Additional credentials showed over half were credentialed School Nutrition Specialists (SNS) (n = 47) and School Nutrition Association Certified (n = 90). Registered dietitians represented 21.7% (n = 55) of participants, and 16.5% (n = 42) held teaching certificates. Over 90% (n = 290) of the respondents were foodservice directors; 6.6% (n = 21) noted other job responsibilities in their school district.

Responding foodservice directors, as noted in Table 11, showed a slight variation from the original sample distribution, with 73.3% (n = 236) of respondents from medium-sized districts, 23.6% (n = 76) from large districts, and 3.1% (n = 10) from extra large districts. More directors from medium-sized districts responded than expected, and fewer directors from large districts responded than expected. The SES of students represented was diverse: 57.6% of the districts had between 21 and 60% of students on free and reduced meal application. The majority (63%, n = 203) of districts served between 61 and 90% of students daily (Table 11). Departmental management by self-operators was recorded by 86.3% (n = 322) of participants, with 13.7% (n = 44) being operated by a management company. Respondents represented all USDA regions, with the highest participation from the midwest region 25.2% (n = 81). All respondents noted participation in the National School Lunch Program.

Table 10. Characteristics of District School Foodservice Directors in Phase 3 (*N* = 363)

Factor	*n*	%
Educational level, *n* = 317[a]		
High school	14	4.4
Some college	65	20.5
Bachelor's degree	130	41.0
Graduate degree	109	34.4
Educational background, *n* = 312[a]		
Nutrition	166	53.2
Business	117	37.5
Hotel, Restaurant, and Institutional Management	83	26.6
Education	74	23.7
Business/Nutrition	50	16.0
Business/HRI	43	13.8
Other	31	9.9
Education/Nutrition	28	9.0
Marketing	12	3.8
What other credentials do you have?, *n* = 254[a]		
Certified SNA	90	35.4
Other	59	23.2
Registered Dietitian	55	21.7
No other credentials	53	20.9
SNS	47	18.5
Teacher's certificate	42	16.5
What best describes your job at the school district?, *n* = 318[a]		
Foodservice director	290	91.2
Other	21	6.6
Superintendent	5	1.5
Health coordinator	1	.3
Nurse	0	

[a]Frequency does not add up to 363 because of non-response to some items.

Table 11. Demographics of Foodservice Directors' Districts in Phase 3 (*N* = 363)

Factors	*n*	%
School district enrollment, *n* = 322[a]		
Medium-size district (2,500-9,999)	236	73.3
Large district (10,000-39,999)	76	23.6
Extra-large district (greater than 40,000)	10	3.1
Percent of free and reduced meal applications, *n* = 320[a]		
0-10%	32	10.0
11-20%	38	11.9
21-30%	65	20.3
31-40%	6	1.9
41-50%	69	21.6
51-60%	44	13.8
61-70%	24	7.5
71-80%	36	11.3
81-90%	2	.6
91-100%	4	1.3
Average daily participation, *n* = 322[a]		
0-10%	1	.3
11-20%	2	.6
21-30%	4	1.2
41-50%	15	4.7
51-60%	51	15.8
61-70%	60	18.6
71-80%	87	27.0
81-90%	56	17.4
91-100%	11	3.4
School management, *n* = 322[a]		
Self-operated	278	86.3
Management company	44	13.7
USDA region, *n* = 321[a]		
Midwest Region	81	25.2
Southeast Region	62	16.9
Southwest Region	44	13.7
Western Region	44	13.7
Mid-Atlantic Region	38	11.8
Northeast Region	29	9
Mountain Region	23	7.2

[a]Frequency does not add up to 366 because of non-response to some items.

Implementation of the Committee Process

Table 12 summarizes the implementation of the committee process. Wellness committee chair responsibility was diverse, but most often (n = 87, 25.6%) held by the combination group. More than 19.8% (n = 67) of wellness committees were chaired by foodservice directors. Foodservice directors and curriculum coordinators chaired the wellness committee in 10.0% (n = 34) of the districts. Only 17.3% of foodservice directors noted no additional expertise was needed by their committee. Student involvement and community expertise (n = 143, 45.8%) were the most needed points of view missing in committees. Resource materials used by committees to develop wellness policies are noted in Table 12. State Department of Education materials (n = 235, 70.8%), samples from other school districts (n = 213, 64.2%), and USDA resources (n = 201, 60.55) were noted by wellness committees as the most frequently used resources.

Committee Involvement

The level of involvement of committee members was not consistent across the committee. Table 13 presents foodservice directors' perceived involvement of various committee members in the wellness committee. Industry representatives and physicians were perceived to have the least level of involvement. Curriculum directors, principals, and superintendents were all rated as moderately involved in the wellness committee.

Wellness Policy Components Utilized in School Districts

The wellness policy legislation has made a marked impact on the wellness policies in school districts. Foodservice directors noted components of the wellness policy set in place before the Child Nutrition and WIC Reauthorization Act in June 2004 and components set in place after June 2004 (Table 14). State and federal guidelines for nutrition education,

Table 12. Implementation of the Committee Process in the Development of Wellness Policies in Schools (*N* = 363)

Factors	*n*	%
Chair of the wellness committee, *n* = 339		
Other, combo	87	25.6
Foodservice director	67	19.8
Other, single	37	10.9
Foodservice director and curriculum coordinator	34	10
Curriculum coordinator	22	6.5
Curriculum, FSD, health, nurse, principal, superintendent, teacher	19	5.6
FSD, health, nurse, parent, principal, teacher	18	5.3
Foodservice director, health	16	4.7
Health	13	3.9
Superintendent	12	3.5
Principal	6	1.8
Nurse	3	.9
Teacher	3	.9
Industry	2	.6
Additional expertise needed on wellness committee, *n* = 312		
Student input	158	50.6
Community input	143	45.8
Curriculum expertise	142	45.5
Nutrition expertise	142	45.5
School administration expertise	141	45.2
Teacher input	134	42.9
Foodservice management expertise	128	41.0
Medical community expertise	116	37.2
Community/student	103	33
School administration/curriculum	94	30.1
Curriculum/nutrition	89	28.5
Medical/nutrition	73	23.4
School administration/curriculum/teachers	65	20.8
Industry/business expertise	54	17.3
No additional input needed	46	14.7
Other	16	5.1
Resources used in developing the wellness policy, *n* = 332		
State Department of Education model or template	235	70.8
Other school district's sample policies	213	64.2
USDA materials	201	60.5
Other school district's sample policies/USDA	175	52.7
School Nutrition Association template	164	49.4
Other school district's sample policies/state Department of Education template	151	45.5
NFSMI materials	132	39.8
CDC materials	121	36.4
Other school district's sample policies/state Department of Education template/USDA	99	29.8
Industry materials	97	29.2
Other	41	12.3

Table 13. Frequency and Mean of District Foodservice Directors' Perceived Level of Involvement of Committee Members on the Wellness Committee in the School Districts (*N* = 363)

Committee member	0[a] *n* (%)	1 *n* (%)	2 *n* (%)	3 *n* (%)	4 *n* (%)	5 *n* (%)	6 *n* (%)	7 *n* (%)	Mean (*SD*)
Foodservice director, *n* = 338			4 (1.2%)	3 (.9%)	19 (5.6%)	32 (9.5%)	31 (9.2%)	249 (73.7%)	6.4 (1.1)
Nurse, *n* = 330	23 (7.0%)	9 (2.7%)	11 (3.3%)	14 (4.2%)	65 (19.7%)	33 (10.0%)	39 (11.8%)	136 (41.2%)	5.1 (2.1)
Foodservice staff, *n* = 329	17 (5.2%)	26 (7.9%)	16 (4.9%)	18 (5.5%)	61 (18.5%)	45 (13.7%)	67 (20.4%)	79 (24.0%)	4.7 (2.1)
Parent, *n* = 325	10 (3.1%)	28 (8.6%)	24 (7.4%)	18 (5.5%)	80 (24.6%)	28 (8.6%)	41 (12.6%)	96 (29.5%)	4.6 (2.1)
Teacher, n = 324	23 (7.1%)	31 (9.6%)	28 (8.6%)	15 (4.6%)	59 (18.2%)	37 (11.4%)	49 (15.1%)	82 (25.3%)	4.4 (2.3)
Principal, *n* = 325	21 (6.5%)	37 (11.4%)	20 (6.2%)	19 (5.8%)	65 (20.0%)	42 (12.9%)	41 (12.6%)	80 (24.6%)	4.3 (2.3)
Other, *n* = 137	26 (19%)	10 (7.3%)	5 (3.6%)	1 (.7%)	25 (18.2%)	13 (9.5%)	10 (7.3%)	47 (34.3%)	4.2 (2.7)
Superintendent, *n* = 326	51 (15.6%)	42 (12.9%)	13 (4.0%)	20 (6.1%)	62 (19.0%)	37 (11.3%)	38 (11.7%)	63 (19.3%)	3.8 (2.5)
Curriculum coordinator, *n* = 327	57 (17.4%)	43 (13.1%)	15 (4.6%)	23 (7.0%)	62 (19.0%)	26 (8.0%)	31 (9.5%)	70 (21.4%)	3.7 (2.5)
Health coordinator, *n* = 226	54 (23.9%)	22 (9.7%)	9 (4.0%)	10 (4.4%)	55 (24.3%)	36 (15.9%)	31 (13.7%)	9 (4.0%)	3.2 (2.3)
Industry/business representative, *n* = 323	79 (24.5%)	48 (14.9%)	21 (6.5%)	19 (5.9%)	51 (15.8%)	33 (10.2%)	29 (9.0%)	43 (13.3%)	3.1 (2.5)
Physician, *n* = 311	112 (36.0%)	44 (14.1%)	20 (6.4%)	18 (5.8%)	47 (15.1%)	24 (7.7%)	15 (4.8%)	31 (10.0%)	2.4 (2.5)

[a]8-point scale, 0 (*not involved*) to 7 (*very involved*).

Table 14. Components District School Foodservice Directors Reported to be Included in School District Wellness Policies (*N* = 363)

Components	Before June 2004		After June 2004		Change
	n	%	*n*	%	%
Nutrition education component					
Followed state-specified standards for nutrition and health education	262	72.2	326	89.8	17.6
Integrated nutrition education into current curriculum	205	56.5	295	81.3	24.8
Utilized the foodservice department for nutrition education	189	52.1	275	75.8	23.7
Offered nutrition education for each grade level	122	33.6	222	61.2	27.6
Required professional standards/development for nutrition education instructors	101	21.8	178	49.0	27.2
Offered nutrition education for adults	58	16.0	169	46.6	30.6
Physical education component					
Followed state-specified standards for physical education	244	67.2	294	81.0	13.8
Required professional standards/development for physical education instructors	193	53.2	247	68.0	14.8
Established specified number of minutes of physical activity per day	167	46.0	248	68.3	22.3
Incorporated physical activity into classroom activities	115	31.7	220	60.6	28.9
Nutrition policy component					
Nutrition guidelines for reimbursable school meals	306	84.3	338	93.1	8.8
Time food can be sold during the school day	192	52.9	300	82.6	30
Location food can be sold on school campus	159	43.8	264	72.7	28.9
A la carte nutrition policy for fat content	109	30.0	289	79.6	49.6
A la carte nutrition policy for saturated fat	103	28.4	276	76.0	47.6
Beverage nutrition standard	103	28.4	291	80.2	51.8
A la carte nutrition policy for sugar content	86	23.7	270	74.4	50.7
Nutrition guidelines for vending machines	82	22.6	287	79.1	56.5
Beverage portion size limitation	79	21.8	268	73.8	52
A la carte nutrition policy for total calories per portion	71	19.6	241	66.4	46.8
Nutrition guidelines for food and beverages served/available at classroom parties	26	7.2	254	70.0	62.8
Nutrition guidelines for fundraisers	25	6.9	247	68.0	61.1
Nutrition guidelines for use of food and beverages as a reward	25	6.9	248	68.3	61.4
Other school-based activities component					
Scheduled recess before lunch	248	68.3	273	75.2	6.9
Ensured adequate time for meals	205	56.5	257	70.8	14.3
Staff wellness programs developed	74	20.4	257	70.8	50.4

Table 14 (continued)

Components	Before June 2004		After June 2004		Change
	n	%	*n*	%	%
Implementation and monitoring					
Principals responsible for implementation	53	14.6	191	52.6	38
Principals responsible for evaluation	39	10.7	149	41.1	30.4
Superintendent responsible for implementation	33	9.1	135	37.2	28.1
Superintendent responsible for evaluation	27	7.4	101	27.8	20.4
Wellness team responsible for implementation	20	5.5	219	60.3	54.8
Wellness team responsible for evaluation	16	4.4	230	63.4	59

physical education, and meal design were the most frequent components in each category in place before and after enactment of the new law.

Nutrition Education Components. Foodservice directors noted the level of nutrition education improved after the enactment of the law with a 24.8% increase in integration of nutrition into the curriculum, a 23.7% increase in the utilization of the foodservice department for nutrition education, a 27.6% increase in requirements for nutrition education for all grades, and a 27.2% increase in requirements for professional standards for nutrition educators. The picture of nutrition education was further expanded with a 30.6% increase in nutrition education offered for adults.

Physical Education Components. The major change in the physical education components came with the incorporation of physical education into the classroom (28.9% increase). A 22.3% increase was noted in schools requiring specific minutes of physical education a day.

Nutrition Policy Components. The majority of foodservice directors (n = 306, 84.3%) noted nutrition guidelines for meals before 2004 were in place. After June 2004, 93.1% (n = 338) of foodservice directors reported nutrition guidelines for meals. Major change occurred

with the implementation of the wellness policy as noted in Table 14. Changes particularly occurred with the use of nutrition guidelines for a la carte foods, beverages, fundraisers, parties, and vending. Results indicating few nutrition guidelines in place for foodservice outside of the federally regulated meal program prior to the wellness policy mandate support findings by French, Story, and Fulkerson (2002). French et al. (2002) found one third of high schools studied had nutrition policies and even fewer had specific policies on types of foods and beverages sold in vending machines, school stores, and school functions.

Other School-Based Activity Components. The majority of foodservice directors (n = 248, 68.3%) reported recess scheduled before lunch was in place in schools before June 2004. After June 2004, 75.2% (n = 273) of district foodservice directors reported recess before lunch. A 50.4% increase was reported in staff wellness policies in schools. Story et al. (1996) suggested schools may affect young people by modeling healthful practices and behavior. The increase in staff wellness programs note a major change in efforts in schools to provide positive modeling for students.

Implementation and Monitoring Components. Wellness teams were designated by 219 (60.3%) of the school districts for implementing and by 230 (63.4%) of the school districts for evaluating the progress of the wellness policy. Table 14 notes foodservice directors reported less progress in the implementation and monitoring component of the wellness policy than other components. GAO (2005) reported sale of competitive foods was difficult to regulate because no one person authorized sales. As schools have developed wellness policies and teams for implementation and evaluation, it appears there is a more organized structure and overriding policy to regulate the sale of competitive food.

Relationship Between Prior Legislative Environment and the Success in Policy Development

Table 15 summarizes a comparison of foodservice directors' reports of components in place before the wellness legislation were enacted in states with a strong legislative environment, as determined in Phase 1, to the national sample in 2004. Likewise, Table 16 lists the wellness components in place in the same strong legislative environment states compared to the national sample in 2006. In 2006, components reported in wellness policies in strong environment states in 2004 (M = 26.6%, SD = 21.9) compared to the reported national sample in 2004 (M = 28.4%, SD = 22.7) were not significant. Likewise in 2006 the states with strong environment mean of 61.7% (SD = 22) compared to the national sample in 2006 (M = 60.1%, SD = 14.9) did not show a significant difference. Results support findings of Serrano et al. (2007) where foodservice directors reported ambitious goals with adopted wellness policies.

Attitude of District School Foodservice Directors About the Wellness Policy

Table 16 summarizes foodservice directors' attitudes about the effect of the wellness policy. Foodservice directors agreed the responsibility for obesity prevention falls with families and 52% (n = 182) agreed obesity prevention is the responsibility of the school. Over half of foodservice directors (n = 182, 52%) believed obesity prevention is the responsibility of schools. The majority of foodservice directors (n = 201, 58%) reported obesity prevention is the responsibility of the community but also observed it is not a top priority of the community (n = 53, 14.3%). Foodservice directors noted greater belief in the success of the wellness policy in improving nutrition guidelines (M = 3.9, SD = 1.0) than in improving nutrition (M = 3.7, SD = 0.8) and physical education (M =3.5, SD = 0.9). Factor

Table 15. Components District School Foodservice Directors Reported to be Included in School District Wellness Policies, Strong Environments Prior to Wellness Mandate (*N* = 363)

	Before June 2004				After June 2004			
	National sample		States with strong environment		National sample		States with strong environment	
Components	*n*	%	*n*	%	*n*	%	*n*	%
Nutrition education component								
Followed state-specified standards for nutrition and health education	262	72.2	26	66.6	326	89.8	37	95
Integrated nutrition education into current curriculum	205	56.5	22	56.4	295	81.3	33	84.6
Utilized the foodservice department for nutrition education	189	52.1	22	56.4	275	75.8	27	69.2
Offered nutrition education for each grade level	122	33.6	13	33.3	222	61.2	21	53.8
Required professional standards/development for nutrition education instructors	101	21.8	8	20.5	178	49.0	15	38.5
Offered nutrition education for adults	58	16.0	8	20.5	169	46.6	19	48.7
Physical education component								
Followed state-specified standards for physical education	244	67.2	24	61.5	294	81.0	30	76.9
Required professional standards/development for physical education instructors	193	53.2	17	43.5	247	68.0	23	59
Established specified number of minutes of physical activity per day	167	46.0	23	59	248	68.3	26	66.7
Incorporated physical activity into classroom activities	115	31.7	13	33.3	220	60.6	21	53.8
Nutrition policy component								
Nutrition guidelines for reimbursable school meals	306	84.3	31	79.5	338	93.1	36	92.3
Time food can be sold during the school day	192	52.9	20	51.2	300	82.6	38	97.4
Location food can be sold on school campus	159	43.8	17	43.5	264	72.7	30	76.9
A la carte nutrition policy for fat content	109	30.0	10	25.6	289	79.6	36	92.3
A la carte nutrition policy for saturated fat	103	28.4	11	28.2	276	76.0	36	92.3

Table 15 (continued)

Components	Before June 2004				After June 2004			
	National sample		States with strong environment		National sample		States with strong environment	
	n	%	*n*	%	*n*	%	*n*	%
Beverage nutrition standard	103	28.4	14	35.9	291	80.2	36	92.3
A la carte nutrition policy for sugar content	86	23.7	5	12.8	270	74.4	33	84.6
Nutrition guidelines for vending machines	82	22.6	13	33.3	287	79.1	32	82.1
Beverage portion size limitation	79	21.8	13	33.3	268	73.8	35	89.7
A la carte nutrition policy for total calories per portion	71	19.6	5	12.8	241	66.4	34	87.2
Nutrition guidelines for food and beverages served/available at classroom parties	26	7.2	1	2.6	254	70.0	33	84.6
Nutrition guidelines for fundraisers	25	6.9	4	10.3	247	68.0	35	89.7
Nutrition guidelines for use of food and beverages as a reward	25	6.9	2	5.1	248	68.3	31	79.5
Other school-based activities component								
Scheduled recess before lunch	248	68.3	6	15.4	273	75.2	12	30.8
Ensured adequate time for meals	205	56.5	22	56.4	257	70.8	26	66.7
Staff wellness programs encouraged staff to serve as role model for wellness behavior	74	20.4	7	17.9	257	70.8	29	74.3
Implementation and monitoring								
Principals responsible for implementation	53	14.6	5	12.8	191	52.6	15	38.4
Principals responsible for evaluation	39	10.7	4	10.3	149	41.1	13	33.3
Superintendent responsible for implementation	33	9.1	1	2.6	135	37.2	11	28.2
Superintendent responsible for evaluation	27	7.4	0	0	101	27.8	11	28.2
Wellness team responsible for implementation	20	5.5	4	10.3	219	60.3	24	61.5
Wellness team responsible for evaluation	16	4.4	2	5.1	230	63.4	29	74.4
Means (*SD*)	103.8 (±82)	28.4 (+22.65)	10.4 (+8.5)	26.6 (+21.9)	218.3 (+54.1)	60.1 (+14.9)	24 (+8.6)	61.7 (+22)

Table 16. Attitudes of District School Foodservice Directors About the Wellness Policy (*N* = 363)

Attitude Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean (*SD*)
School Characteristics Factor[a]						
Our district wellness policy is the responsibility of all district employees.	11 (3.2%)	28 (8.1%)	45 (13.0%)	165 (47.8%)	96 (27.8%)	3.9 (1.0)
Our district wellness policy will improve district nutrition guidelines.	4 (1.2%)	15 (4.3%)	42 (12.1%)	223 (64.5)	62 (17.9%)	3.9 (0.8)
Our district wellness policy will improve the health of students.	8 (2.3%)	18 (5.2%)	74 (21.2%)	198 (56.7%)	51 (14.6%)	3.7 (0.9)
Our district wellness policy will improve nutrition education.	4 (1.1%)	21 (6.0%)	84 (24.1%)	194 (55.7%)	45 (12.3%)	3.7 (0.8)
Our district wellness policy will improve physical education.	4 (1.2%)	34 (9.9%)	119 (34.6%)	150 (43.6%)	36 (10.5%)	3.5 (0.9)
Our district wellness policy can be implemented with the current resources in the district.	15 (4.4%)	57 (16.6%)	66 (19.2%)	174 (50.6%)	32 (8.7%)	3.4 (1.0)
Obesity prevention is the responsibility of the community.	13 (3.8%)	55 (15.9%)	77 (22.3%)	169 (48.8%)	32 (9.2%)	3.4 (1.0)
Obesity Prevention Factor[b]						
Obesity prevention is the responsibility of the school.	24 (6.9%)	64 (18.4%)	78 (22.4%)	162 (46.6 %)	20 (5.4%)	3.3 (1.0)
Obesity prevention is the top priority in my community.	24 (7%)	117 (34.3%)	148 (43.4%)	47 (12.8%)	5 (1.5%)	2.7 (0.9)

Note. 5-point scale, 1 (*strongly disagree*) to 5 (*strongly agree*).

[a]Cronbach alpha for school characteristics factor = .784. [b]Cronbach alpha for obesity prevention = .769.

analysis indicated two dimensions for the attitude factor, which were identified as "school characteristics" and "obesity prevention strategies." The school characteristics dimension included the items: improve health, nutrition guidelines, nutrition education, physical education, employee responsibility for implementation, top priority of community, and current resources adequate for implementation. The obesity prevention strategies dimension consisted of the variables obesity prevention family responsibility, obesity prevention school responsibility, and obesity prevention community responsibility. The Cronbach reliability estimates for these dimensions were .78 and .57, respectively. The alpha score of .57 for obesity prevention strategies was deemed unacceptable (a value of Cronbach alpha of .70 or above was considered acceptable). Once the family responsibility variable was removed from obesity prevention strategies the dimension yielded a Cronbach's alpha of .77. Thus, the attitude variables were specified as two latent variables—school characteristics and obesity prevention strategies—and as one observed variable: family responsibility.

The ANOVA procedure accompanied by Tukey's HSD post hoc tests indicated that significant differences existed among the USDA regions for the school characteristics factor, $F(6,313) = 2.279$, $p < .05$. The Tukey's HSD post hoc test indicated significant differences between the mountain region ($M = 3.5$, $SD = .5$) and the southeast region ($M = 3.8$, $SD = .5$) and between the southwest region ($M = 3.4$, $SD = .6$) and the southeast region ($M = 3.8$, $SD = .5$). The southeast region had a stronger school characteristic attitude about the wellness policy than the mountain plain and southwest regions. Similarly, the procedure showed that the school characteristics latent variable varied significantly by SES of the school district, $F(8,310) = 3.534$, $p < .05$. Tukey's HSD post hoc tests noted a significance of less than .05 between SES 0-10% ($M = 3.3$, SD = .7) and SES 71-80% ($M = 4.0$, $SD = .5$), SES 11-20%

(M = 3.4, SD = .6) and SES 71-80% (M = 4.0, SD = .5), SES 21-30% (M = 3.4, SD = 6) and SES 71-80% (M = 4.0, SD = .5), and SES 51-60% (M = 3.6, SD = .5) and 71-80% (M = 4.0, SD=.5). School foodservice directors from low-income school districts had a stronger school characteristic attitude than school foodservice directors from high income school districts. Also, the procedure noted significant differences in the family responsibility variable by the SES of the school district, $F(8,308) = 2.255$, $p < .05$. Tukey's HSD post hoc tests showed a significance of less than .05 between SES 21-30% (M = 4.4, SD = 7.6) and SES 71-80% (M = 3.7, SD = 1.3), and SES 51-60% (M = 4.4, SD = .6) and SES 71-80% (M = 3.7, SD = 1.3), Foodservice directors from schools with low-income students had a greater belief that families have the responsibility for obesity prevention than did foodservice directors from middle income or high income schools.

There were no significant differences in school characteristics for education, $F(3,313) = .424$, $p > .05$; certification credentials, $F(3,11) = 1.346$, $p > .05$; district enrollment, $F(2,318) = 1.019$, $p > .05$; or state legislative environment, $F(2,319) = 1.207$, $p > .05$. Likewise, there were no significant differences in obesity prevention strategies among USDA regions, $F(6,313) = .766$, $p > .05$; by education, $F(3,313) = 1.812$, $p > .05$; by credentials, $F(3,11) = .284$, $p > .05$; by SES of the school district, $F(2,318) = 1.320$, $p > .05$; by school district enrollment $F(8,310) = 1.169$, $p > .05$; or by state legislative environment, $F(2,319) = 1.506$, $p > .05$. Also, no significant differences were observed for family responsibility among USDA regions, $F(6,311) = .485$, $p > .05$; by education, $F(3,311) = 1.329$, $p > .05$; by credentials $F(3,11) = .237$, $p > .05$; by school district enrollment, $F(2,316) = 1.783$, $p > .05$; or by state legislative environment, $F(2,317) = 1.60$, $p > .05$.

Supporting Factors for Wellness Policy Development and Implementation

Key determinants for the development and implementation of the wellness policy included the federal mandate ($M = 4.3$, $SD = 0.9$), concern for children's health ($M = 3.9$, $SD = 1.0$), state laws and guidelines for school foods ($M = 3.8$, $SD = 1.1$; Table 17). Although the CDC SHPPS study (Wechsler et al., 2001) reported the majority of school districts had health committees, foodservice directors perceived the prior established health committees only somewhat supportive in the development of the wellness policy. Kubik et al. (2001) suggested schools were not prepared to handle policy formation on nutrition related issues.

The exploratory factor analysis procedure for supporting factors yielded two factors: school characteristics (concern for student health, champion, baseline, training, public meetings, health committees) and legislative characteristics (federal mandate, state guidelines, wellness template). The Cronbach alpha for school characteristics was acceptable at .73. The Cronbach alpha for legislative characteristics, however, was unacceptable at .59. The methodology used tried to separate "supporting factors" into two dimensions. This procedure did not yield dimensions with significant reliability, therefore, "supporting factors" were considered as a single latent variable. The Cronbach alpha value for supporting factors was .76. The ANOVA procedure indicated no significant differences in supporting factors based on SES of the school districts, $F(8,266) = 1.79$, $p > .05$; USDA regions, $F(6,267) = 2.1$, $p > .05$; school district enrollment, $F(2, 274) = .87$, $p > .05$; or the state legislative environment, $F(2,274) = 2.83$, $p > .05$.

Table 17. Supporting Factors to Wellness Policy Development and Implementation (*N* = 363)

Supporting factors [a]	Not in place *n* (%)	No support *n* (%)	Somewhat supportive *n* (%)	Moderate support *n* (%)	Very supportive *n* (%)	Mean (*SD*)
Federal mandate for a wellness policy in schools	3 (.9%)	9 (2.8%)	52 (16.3%)	75 (23.4%)	181 (56.6%)	4.3 (0.9)
Concerns for children's health supported the development of the wellness policy	7 (2.3%)	15 (4.8%)	80 (25.7%)	98 (31.5%)	111 (35.7%)	3.9 (1.0)
Additional state nutrition standards or guidelines	16 (5.1%)	13 (4.2%)	73 (23.5%)	104 (33.4%)	104 (33.8%)	3.9 (1.1)
Wellness policy template developed by your state department	28 (9.2%)	21 (9.2)	72 (23.5%)	90 (29.4%)	95 (31%)	3.7 (1.2)
Having a superintendent that "championed" the wellness policy supported the development of the policy	23 (7.6%)	39 (12.8%)	80 (26.3%)	81 (26.6%)	81 (26.6%)	3.5 (1.2)
Determination of baseline wellness activities in your school district	22 (7.1%)	25 (8.0%)	116 (37.2%)	101 (32.4%)	48 (15.4%)	3.4 (1.1)
Training on wellness policy writing	45 (14.9%)	44 (14.5%)	100 (33%)	62 (20.5%)	52 (17.2%)	3.1 (1.3)
Having public meeting about the wellness policy assisted in the development process	72 (23.4%)	57 (18.5%)	85 (27.6%)	60 (19.5%)	34 (11%)	2.8 (1.3)
District health committee existed before the wellness policy mandate	117 (38.9%)	33 (11.0%)	59 (19.6%)	53 (17.6%)	39 (13.0%)	2.6 (1.5)

Note. 5-point scale, 0 (*not in place*) to 5 (*very supportive*).

[a]Cronbach alpha= .76.

Barriers to Wellness Policy Development and Implementation

The scores for all barriers were between 2.1 and 2.7 on a 4 point scale, indicating barriers were present with the development and implementation of the wellness policy, but not insurmountable. The top barrier to wellness policy development and implementation was the need to use food in fundraising ($M = 2.7$, $SD = 1.1$; Table 18). The second highest barrier noted was the competition for time of both teachers ($M = 2.5$, $SD = 1.2$) and principals ($M = 2.4$, $SD = 1.2$) because of the demands of No Child Left Behind legislation. Foodservice directors noted lack of administrative support ($M = 2.0$, $SD = 2.0$) and a lack of connection to the power structure ($M = 2.1$, $SD = 1.1$) as less of a barrier than the need for money and time in the school district.

Exploratory factor analysis yielded two dimensions of barriers: resource barriers (need for fundraisers with food, NCLB teacher time, and NCLB principal time) and organizational barriers (lack need, no teacher support, no parent support, no administration support, lack of connection to power structure, and lack of organizational structure). The Cronbach alphas for these factors equaled .81 and .89, respectively.

The ANOVA procedure indicated significant differences in the resource barrier among USDA regions, $F(6,291) = 3.05$, $p < .05$. Tukey's HSD post hoc test showed significant differences ($p < .05$) between the western ($M = 2.9$, $SD = .8$) and midwest ($M = 2.3$, $SD = .9$) regions and between the western ($M = 2.9$, $SD = .8$) and northeast ($M = 2.2$, $SD = 1.0$) regions. Western region foodservice directors noted more resource barriers in development and implementation of the wellness policy than foodservice directors in the midwest and northeast regions. The ANOVA procedure also found significant differences by the SES of school districts, $F(8,290) = 2.356$, $p < .05$. Differences were noted between SES

Table 18. District School Foodservice Directors Perceived Barriers to Wellness Policy Development and Implementation (*N* = 363)

Barriers	Not a barrier *n* (%)	Somewhat a barrier *n* (%)	Moderate barrier *n* (%)	Major barrier *n* (%)	Mean (*SD*)
Resource Barrier Factor[a]					
Need for fundraiser with food	53 (17.5%)	59 (19.5%)	106 (35%)	85 (28.1%)	2.7 (1.1)
Requirement of No Child Left Behind on teacher time	85 (29.3%)	64 (22.1%)	64 (22.1%)	77 (26.6%)	2.4 (1.2)
Requirements of No Child Left Behind on principal leadership time	89 (31.2%)	59 (20.7%)	67 (23.5%)	70 (24.6%)	2.4 (1.2)
Organizational Barrier Factor[b]					
Lack of support from teachers	65 (21.5%)	98 (32.5%)	86 (12.4%)	53 (14.4%)	2.4 (1.0)
Lack of perceived need for the policy	82 (27.1%)	84 (27.7%)	87 (28.7%)	50 (16.5%)	2.4 (1.0)
Lack of support from parents	91 (30.0%)	108 (35.6%)	65 (21.5%)	39 (12.9%)	2.2 (1.0)
Lack of organizational structure in the district to make changes needed for wellness policy	105 (34.3%)	94 (30.7%)	65 (21.2%)	42 (13.7%)	2.1 (1.0
Lack of connection in the power structure of the district	114 (37.7%)	89 (29.5%)	59 (19.5%)	40 (13.2%)	2.1 (1.1)
Lack of support by administration	127 (41.2%)	80 (26.0%)	62 (20.1%)	39 (12.7%)	2.0 (2.0)
Lack of connection in the power structure of the district	114 (37.7%)	89 (29.5%)	59 (19.5%)	40 (13.2%)	2.1 (1.1)

Note. 4-point scale, 1 (*not a barrier*) to 4 (*major barrier*)

[a]Cronbach alpha for resource barrier = .81. [b]Cronbach alpha for organizational barrier = .89.

0-10% (M = 2.2, SD = 1.0) and 51-60% (M = 2.5, SD = .9) and between SES 11-20% (M = 2.3, SD = 1.0) and SES 51-60% (M = 3.0, SD = .9). It appears that the foodservice directors from high income school districts had significantly fewer barriers to implementing the wellness policy than observed by foodservice directors from middle income schools. The ANOVA procedure identified no significant differences in the resource barrier by state legislative environment, $F(2,298) = 2.69$, $p > .05$; certification credentials, $F(3,11) = 1.99$, $p > .05$; education, $F(3,295) = 1.73$, $p > .05$; or district enrollment, $F(2,298) = 2.51$, $p > .05$.

The ANOVA procedure identified significant differences in the organizational barriers by school enrollment, $F(2,305) = 3.37$, $p < .05$. The Tukey's HSD post hoc test showed significant differences between medium-sized (M = 2.1, SD = .8) and large (M = 2.4, SD =.8) school districts. Large school districts foodservice directors rated barriers in wellness policy development and implementation higher than medium size school foodservice directors Similarly, the ANOVA procedure showed significant differences in organizational barriers by USDA region, $F(6,298 = 2.51$, $p < .05$. The Tukey's HSD post hoc test indicated significance differences ($p < .05$) between the southwest (M = 2.5, SD = .8) and midwest (M = 2.0, SD = .8) regions. Foodservice directors in the southwest region rated organizational barriers higher than foodservice directors in the midwest. The ANOVA procedure found no significant differences in organizational barriers by SES of the school districts, $F(8,297) = .667$, $p > .05$; state legislative environment, $F(2,305) = 1.25$, $p > .05$; certification credentials, $F(3,11) = 1.35$, $p > .05$; or education, $F(3,302) = .248$, $p > .05$].

The results did not support the findings of Barratt et al. (2004). They found the lack of administrative and teacher support were barriers to a policy concerning the use of food as a reward or punishment. The potential difficulty anticipated in discontinuing fundraisers

supports the level of involvement in competitive food sales reported by the SHPSS study (Wechsler et al., 2001) and GAO (2000). The need for fundraisers supports the findings of Timar (2004) that there was a decrease in school funding.

Complexity Theory and the Wellness Policy in Schools

The first principal of complexity theory is connectivity and interdependence (Middleton-Kelly, 2003). Complex behavior arises from the interrelationship, interaction, and interconnectivity of elements within a system and between a system and its environment. A high degree of dependence may not always have beneficial effects throughout the system. When one entity tries to improve its performance, this change may result in a worsening condition for others. Each improvement in one entity may result in an associated cost for other entities within the same system. School districts demonstrated the first principal of the complexity theory with the results noted in Phase 2 and Phase 3 regarding barriers for development and implementation. School districts reported a major barrier to the wellness policy was the competition for time, whereas principals and teachers emphasized the needed improvements demanded by No Child Left Behind legislation. Likewise, competition for school funds is an issue of connectivity and interdependence in schools. The wellness policy is an unfunded mandate to schools. In Phase 2, money to support the program and enforcement were the most frequently mentioned needs to make the wellness policy successful. Changes in vending further demonstrate connectivity and interdependence. There is competition in schools for student purchases. Vending machines are stocked with selections to capture student purchases. Money is needed in schools to cover unfunded student expenses. The greatest barrier to wellness policy implementation was the need for

food items in fundraising. Improvements made in the food environment would potentially hurt the fundraising efforts of the school district.

Other aspects of complex systems are they are multi-dimensional, and all the dimensions interact and influence each other. A distinguishing characteristic of complexity theory is the ability of a system to adapt, evolve, and create new order and coherence. Other features include the ability of the system to change the rules of interaction; to act on limited knowledge, without knowing what the system as a whole is doing; and to self-repair and self-maintain. Propagation of influence through an ecosystem depends on the degree of connectivity and interdependence. Connectivity may be formal or informal, designed or undesigned, implicit or explicit. It is the degree of connectivity that determines the network of relationships and the transfer of information and knowledge. It is an essential element in the feedback process. The wellness policy created a new order in schools. In Phase 2, foodservice directors noted the wellness committee brought together school staff that regularly work independently yet all influence the wellness environment. Frequently the goal of the various groups was profit with little consideration for student health. The wellness policy created a new order with student health being the top priority. Foodservice directors reported wellness committees brought new networks of relationships and transfer of information such as student members disclosing food sales by teachers in classrooms and students from lockers. The wellness policy efforts heightened the propagation of the influence of wellness in the school district as noted by the changes in Phase 3 after the passage of wellness policy legislation. In particular, changes in nutrition guidelines for a la carte foods, beverages, fundraisers, parties, and vending were significant.

A second concept of complexity theory is co-evolving ecosystems (Middleton-Kelly, 2003). Each organization is a fully participating agent that both influences and is influenced by a social ecosystem made up of all related businesses, consumers, and suppliers, as well as economic, cultural, and legal institutions. Once the ecosystem is affected, it will in turn affect the entities within the system. A co-evolving ecosystem is evident in the wellness policy implementation. In Phase 1, there was a major move after June 2004 by state legislatures to enact laws and change regulations. Foodservice directors in Phase 2 noted this burgeoning effort in state wellness legislation left food manufacturers in a state of confusion. Foodservice directors, in Phase 2, indicated a federal wellness policy would clarify the food products needed for schools. The School Nutrition Association's *2007 Legislative Issue Paper* called for Congress to require a uniform national standard to govern the sale of all foods sold or made available on the school campus during the school day. Evidence of a negative co-evolving system was the sale of junk food out of student lockers noted in Phase 2. A participant from Phase 2 noted the influence of the legal institution when the school district was fined because of the nutritional value of items in the vending machine. After that point, the foodservice director became very involved with the foods stocked in vending machines.

A third concept of complexity theory is dissipative structures, which are ways in which open systems exchange energy, matter, or information with their environment and, which, when pushed "far-from-equilibrium," create new structures (Middleton-Kelly, 2003). When a social entity is faced with a constraint, it finds new ways of operating, because away-from-equilibrium systems are forced to experiment and this exploration helps them discover and create new patterns of relationships and different structures. Faced with restrictions on

fundraising, principals need to find new ways to generate funds without food. In Phase 1 examples of creative fundraising suggestions and success stories on state Department of Education websites were found. In Phase 2, foodservice directors offered examples of efforts of highly motivated principals in wellness policy implementation. Efforts included changing the content of vending machines, eliminating food in fundraising, and suggesting to teachers eliminating the use of food for rewards. Foodservice directors in Phase 2 also noted frustration in the lack of change in vending foods and use of food to reward students. Phase 3 further emphasized the lack of an evolving system with the top barrier to the wellness policy implementation being the need for food for fundraisers.

A fourth concept of complexity theory suggests that to survive and thrive an entity needs to explore its possibilities and generate variety (Middleton-Kelly, 2003). Any strategy can be optimal under only certain conditions, and when conditions change, the strategy may no longer be optimal. To survive, management needs to be constantly scanning the environmnet and trying different strategies. An organization with flexible adaptation also requires new connections or new ways of seeing things. In Phase 2, foodservice directors noted principals were so busy with the needed changes for requirements of No Child Left Behind that they did not have time to deal with changes in the the wellness policy. The time needed to create new fundraisers was a concern. Food manufacturers were trying to help foodservice departments change by developing new products but were frustrated in the effort because of the differences in nutritional guidelines.

A fifth concept of complexity is feedback (Middleton-Kelly, 2003). Positive feedback (reinforces) drives change, and negative feedback (balancing, moderating, or dampening) maintains stability in a system. Co-evolution may also depend on reciprocal feedback

influences between entities. An important question to consider is: How does the degree of connectivity and feedback influence co-evolution? Also, how does the structure of an ecosystem affect co-evolution? In Phase 2, results did not find a similar theme or strategy that drove the wellness policy mandate from development to successful implementation.

A sixth concept of complexity is self-organization, or the emergence and creation of a new order (Middleton-Kelly, 2003). Self-organization is when natural selection and spontaneous emergence or order occurs in a changing system. Emergence is related to the concept of the "whole." The system might need to be considered as a complete and interacting whole rather than separate elements. Emergence is the process that creates new order together with self-organization. The logic of complexity suggests that learning and the generation and sharing of knowledge need to be facilitated by providing the appropriate socio-cultural and technical conditions to support connectivity and interdependence and to facilitate emergence and self-organization. The latter two characteristics in particular are often blocked or restricted by complicated authorization procedures (Middleton-Kelly, 2003). In Phase 2 and Phase 3, foodservice directors rated the federal mandate as the most supportive element in the development and implementation of the wellness policy. The federal mandate with local implementation appears to have successfully circumvented the possible problems created by complicated authorization procedures. In Phase 2 a foodservice director from a state with highly prescriptive nutrition guidelines noted parents, staff, and foodservice workers were frustrated and angry over the forced guidelines. The complicated authorization procedures created by state mandates possibly related to problems in the overall acceptance of the wellness policy. In Phase 3, foodservice directors perceived lack of connection in the power structure, lack of support from administration, and lack of

organization structure for wellness policy implementation as minimal barriers to the wellness policy. In Phase 3, the most frequently noted entity responsible for the implementation and monitoring of the wellness policy was the wellness committee. In comparing school districts before the federal mandate and after the federal mandate, the functioning of the wellness committee notes an emergence of a new order with self-organization. Figure 2 presents a model of the wellness policy development based on systems theory. Based on findings of this study, the model developed is a modification of systems theory describing the development of wellness policies in schools. The model helps explain the dynamic interrelationship of several parts forming a larger whole as it interacts with its environment. The model describes an organization composed of several parts that are in interaction with one another. The organization includes culture, tasks, people, structures, processes, and dominant coalition. The organization, having permeable boundaries, interacts with the environment from where they obtain input and they export an output. The organization has a feedback mechanism that allows various parts to adjust to other parts.

The model specifies a flow of events that begins with the human, material, and curriculum input and ending with the students' nutrition and physical education knowledge, wellness habits, and nutritional status. Additional output would be products developed and profit objectives achieved. The organization's structure signal to school district organizational members' behavior that is desired and reinforced. There are few rewards in school districts to reinforce the wellness policy. Likewise, controls are minimal. Structures help shape organizational processes. The structures and organization help mediate the needs, ability, expectation, and values of people in the school organization. The tasks, people, structures, and processes form how the culture should be operating. The culture in turn

influences and shapes the four parts of tasks, people, structure, and processes. The dominant coalition, a small number of key decision makers, affects all of the organization through their position of power and influence, and experience with all parts of the organization.

The developed model (Figure 2) describes the elements that affect foods sold in schools, students' nutrition knowledge and behavior, and school profitability. The results of the research describe federal legislation in the environment as the major factor that changes the output in schools. Though people's expectations and values influence change in the school system, the influence is not as great as the federal legislation. French et al. (2002) supported this idea. They found that secondary principals believed it was important to have a healthful environment at school, yet only one third of the schools had nutrition policies. The rewards in the system are intrinsic and extrinsic. The intrinsic rewards of providing a healthy environment for students are significant for foodservice directors. Extrinsic rewards are limited. It would be helpful to encourage SNA, USDA, health related association, and local school boards to develop recognition awards for excellence in wellness policy implementation.

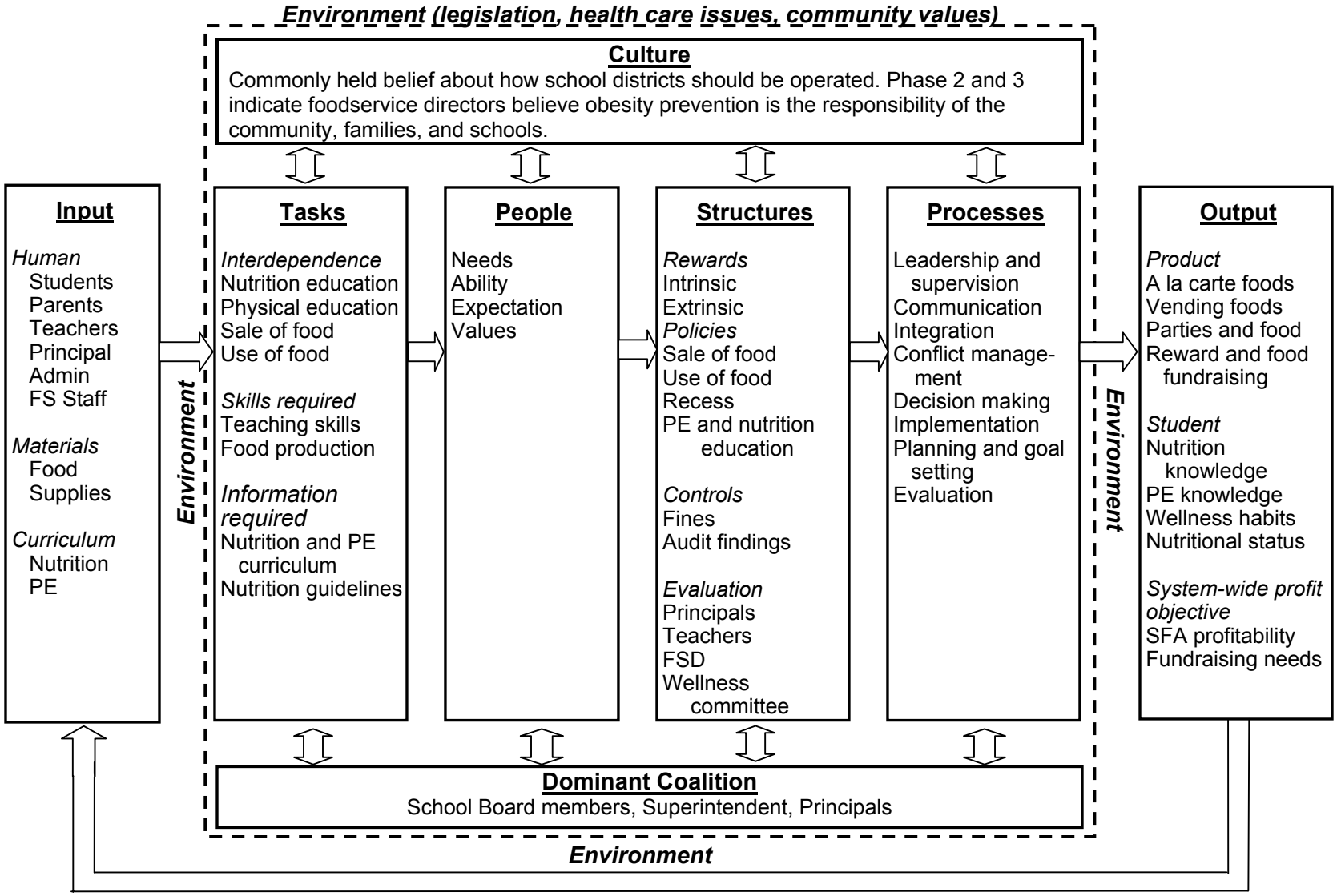

Figure 2. Systems Theory Model for Wellness Policy Formation and Implementation

CHAPTER V. CONCLUSIONS

This chapter presents a summary of this study, followed by implications for theory and applications for school foodservice. Limitations of this study are presented. Finally suggestions for future research are discussed.

Summary of the Study

Laws and Regulations Prior to the Federal Mandate

Phase 1 of this study examined legislative and regulatory environments for school foods in all 50 states. The state child nutrition department website for each state was reviewed for evidence of wellness policy templates and wellness policy training. The state legislative laws and regulations were compared to the *Healthier U.S. School Challenge* (USDA, 2004). State scores were derived from the comparison to the *Healthier U.S. School Challenge* and evidence of training and templates. Before the Child Nutrition and WIC Reauthorization Act of 2004, only three states met the criteria for a strong wellness environment. After the passage of the federal legislation, 39 state legislatures considered or enacted legislation related to the nutritional quality of school foods and beverages, resulting in 22 states meeting the criteria for a strong wellness environment. The Child Nutrition and WIC Reauthorization Act of 2004 required state child nutrition departments to develop resources and training for school districts. Resources were developed as mandated, and school foodservice directors nationwide used these resources most frequently for the development of wellness policies. States were rated for strong and weak wellness environments to determine states included in Phase 2. Before the Child Nutrition and WIC

Reauthorization Act of 2004, few states had legislation or training to support a wellness environment in schools.

Perceived Relationship Between States' Legislative Environment and Wellness Policy Development

In Phase 1, California, Mississippi, and Tennessee were scored as having strong wellness environments when the legislation was enacted. In Phase 2, foodservice directors rated state laws governing food sales as a major supporting factor in the development of the wellness policy. In Phase 3, foodservice directors did not perceive the state's legislative environment to be a major influence on the development of the school district wellness policy. Foodservice directors from states rated as having a weak environment and those from states with a strong legislative environment were compared for attitude, barriers, and supports. There was no difference found between the groups. There was no difference in wellness components in place in strong environment states in 2004 (M = 26.6%, SD = 21.9) compared to the reported national sample in 2004 (M = 28.4%, SD = 22.65). Likewise in 2006, there was no difference. A state's legislative environment for wellness appears to have limited correlation with the development of a wellness policy in schools.

Wellness Policies Prior to Federal Mandate and Changes After Mandate

Before the federal mandate, school districts gave consideration to state-specified standards and federal meal requirements. Scheduling recess before meals and providing adequate time for meals also were given consideration. Before the wellness legislation, few foodservice directors reported nutrition guidelines in place for student rewards, fundraisers, or classroom parties. These three items were school-wide policies. Nutrition guidelines for a la carte food were reported by only one fourth of the foodservice directors. Staff wellness

programs and requirements for professional standards for nutrition education instructors were noted by less than a fifth of respondents. Foodservice directors reported that before the wellness legislation, 37.4% of the wellness components were in place. Following the wellness policy legislation, 72.4% of the wellness components were in place. The nutrition policy components were the variables that changed the most also were reported as the components most frequently in place. In Phase 2, foodservice directors reported nutrition components in place but did not notice changes in nutrition education and physical education. Foodservice directors had limited knowledge of the curriculum used for nutrition education. Nutrition education curriculum that is sequential, for every grade, and supports the needs of No Child Left Behind is essential for the success of the nutrition education component of the wellness policy. Infusing nutrition education into the curriculum to support goals of No Child Left Behind allows educators to meet the goals that determine federally mandated school achievement and nutrition education. Time restraints do not allow for both NCLB curriculum and a separate nutrition education curriculum.

Foodservice Directors' Beliefs and Attitudes About the Wellness Policy

The component with the greatest variability for attitude is nutrition education. Programming targeted at nutrition education would have the greatest chance to influence foodservice directors' attitudes about the wellness policy. The variable with the strongest agreement of foodservice directors was the belief that obesity prevention is the responsibility of families. Foodservice directors also agree obesity prevention is the responsibility of schools. Additionally, the majority of foodservice directors reported obesity prevention is the responsibility of the community but also observed it is not the top priority of the community. Likewise, in Phase 2 foodservice directors described very limited community outreach and

publicity during the development of the wellness policy. Foodservice directors consider the responsibility of obesity prevention to be the combined efforts of the community, family, and school.

SES of school districts and USDA region influenced the attitude of foodservice directors. The southeast region has a stronger school characteristic attitude dimension (dimension of attitude includes: improve health, nutrition guidelines, nutrition education, physical education, employee responsibility for implementation, top priority of community, and current resources adequate for implementation) about the wellness policy than the mountain plain and southwest regions. School foodservice directors from low income school district had a stronger school characteristic attitude than school foodservice directors from high-income school districts. Foodservice directors from schools with low income students had a greater belief that families have the responsibility for obesity prevention than foodservice directors from middle income or high income schools.

Foodservice Directors' Perceptions of Committee Wellness Knowledge

In Phase 2, half of the foodservice directors believed they had adequate expertise on their committee for policy development. Half believed they needed additional expertise. The most frequently missing expertise were students, school board members, and medical expertise. One third of committees' memberships met the criteria established by the federal mandate.

In Phase 3, 15% of foodservice directors noted they did not need further expertise on the wellness committees. Student expertise was the greatest missing knowledge. Community, curriculum, nutrition, and school administration expertise also were missing from wellness committees.

Foodservice directors observed the wellness committee brought together for the first time entities that work independently in schools. The committee was brought together for focus on wellness. Future research will evaluate the success of this new group.

Wellness Policy Committee Process

In Phase 2, wellness policy committees were most frequently chaired by assistant superintendents. In Phase 3, wellness policy committees were most frequently led by co-chairs composed of a variety of school personnel. The second most frequent position to lead the wellness committee was the foodservice director. Foodservice directors and nurses were perceived to have the highest level of involvement, with industry representatives and physicians having the least involvement. Industry representatives did not participate in wellness policy committees to communicate their position and needs. In Phase 2, public outreach was very limited, yet foodservice directors perceived that the community placed wellness low in priority.

In Phase 2, two thirds of school district committees did not evaluate the status of the district with measurable methods. Likewise, it was evident that implementation and evaluation components showed limited progress. State department tools requiring district assessment that produced implementation and evaluation goals appeared very helpful. Phase 3 found 75.7% of wellness components in place.

Foodservice directors found the materials developed by state Department of Education child nutrition programs, other school district policies, and USDA materials to be the most helpful. The development of state Department of Education materials for wellness policy development were part of the federal mandate.

Foodservice Directors' Perceptions of Support for the Wellness Policy

Foodservice directors reported in Phases 2 and 3 that the enactment of the federal law was the top supporting factor in the development of a wellness policy in school districts. Concern for student health and state laws and guidelines for school foods were significant supporting factors for wellness policy development. There was no difference found in supporting factors for education, credentials, SES, enrollment, or legislative environment.

In Phase 2, respondents noted the competition for time, wellness not a priority, and the need for funds for student activities as barriers to the wellness policy. In Phase 3, the top barrier to the wellness policy development and implementation was the need to use food for fundraising. Competition for time of principals and teachers because of No Child Left Behind legislation was the second greatest barrier.

In Phase 2, enforcement of the wellness policy by school administrators and money to support the program were the most frequently mentioned needs to make the wellness policy successful. In Phase 3, foodservice directors did not perceive the lack of connection in the power structure as a major barrier for the development and implementation of the wellness policy.

Application for School Foodservice

The major implication for practice is to note that specific laws are needed at either the state or federal level to achieve transformational change in school nutrition and exercise programs. Mandating training materials to support future changes would be helpful. Laws and funding specifically targeted toward physical education are needed. Laws and programs targeted to change nutrition education would have the most effect on foodservice directors' attitudes about the wellness policy. Competition for money and time were identified as major

barriers in schools. Further research is needed to establish how wellness policy implementation progress will be evaluated.

Foodservice directors in this study believed the establishment of one federal policy would be helpful in avoiding confusion for all entities involved in school meals. Foodservice directors perceive food manufacturers are having difficulty producing needed and cost effective products for the wide variance of nutrition policies. Nutrition education materials that are written to be integrated into curriculum to support NCLB, written for each grade level, and sequential need to be developed.

Foodservice directors in school districts with the lowest income students had the greatest belief that obesity prevention is the responsibility of the family. Children from low income families have a higher risk of obesity than higher income students. Also, low income families have the least resources to prevent obesity. Program development for obesity prevention in low income schools needs to be targeted not only at families but at the foodservice directors.

Only 14% of respondents were from management company foodservice directors. The change in a la carte sales, school stores, and vending will affect the profit of foodservice operations. Management companies provide schools profit. Future research is needed to determine changes for foodservice management companies in schools as a result of the wellness policy.

Several intermediate lessons were learned about the committee process that provide evidence for recommendations for future wellness policy development and implementaion. The first recommendation is the need to have more community outreach and publicity to help raise the priority the community establishes for the wellness problem. The second

recommendation would be the involvement of all parties impacted by the change, such as food manufacturers. The third recommendation would be stronger student involvement. The fourth recommendation involves the need for adequate funding for schools so the sale of junk food does not become a needed revenue source to provide an education for children in the U.S. A fifth recommendation is the need for quicker action of federal and state legislators and regulatory agencies to a problem. When USDA was defeated in *National Soft Drink Association v. Block* (1983), the need to adjust laws and prevent problems required action sooner than 21 years later.

Implications for Theory

Complexity theory worked well as a framework for the development and implementation of the wellness policy. There are aspects of wellness policy development that were predicted by complexity theory. The principles of connectivity and interdependence helped explain the problems school districts faced with implementation of the wellness policy. School districts work as a whole unit with the use of limited funds and staff time. The wellness policy calls for changes in the established use of funds and time and, not surprisingly, was identified as a barrier for implementation of the wellness policy. Wellness policy formation pushed school districts to evolve and develop a new order. Wellness committees have brought together entities that normally work independently from each other. The purpose of the group for improving the school wellness environment is new. A second concept of co-evolving ecosystems is evident in the burgeoning efforts of states to pass wellness legislation to influence the wellness environment in schools. The confusion state legislation and individual school district policies have created for manufacturers is an example of a co-evolving problem. The new structure of the wellness committees in schools

is an example of the third concept of complexity theory, dissipative structures. Foodservice directors did not score lack of support of administration, connection to the power structure, or lack of organization to the power structure as barriers for wellness policy formation and implementation. The principle of self-organization has occurred in response to the wellness legislation. School districts are creating new systems with the formation of wellness committees for policy formation and implementation. Because wellness policies are locally written, the problems frequently noted by complexity theory of complicated authorization have been avoided.

There are also aspects not developing in wellness policy implementation as predicted by complexity theory. A concern with the implementation of the wellness policy is the lack of development of a new structure for fundraising. Complexity theory predicted this change would evolve. The fourth concept of complexity theory suggests that an entity needs to explore new possibilities to survive. Principals' lack of time to create new fundraisers is a concern for the success of the wellness policy implementation.

Limitations of the Study

Several limitations of this study are recognized. All self-reported data relies on respondents to provide accurate information. This study is not representative of smaller districts because of the difficulty of making contact with foodservice directors in those districts. Some smaller districts do not designate a foodservice director. The school food authority may be the superintendent, a cook, or a secretary. A survey may not have been completed because no one in particular is assigned to receive or respond to mail or computer inquires. Small districts have limited resources and may or may not have computers in the

foodservice operation. The staff may or may not be familiar with computer surveys. Firewalls protect school districts' e-mail systems, thus, limiting access to schools.

Another limitation is the time lapse in the study. Data recollected from June 2004 reflects a long time to have accurate recall of information. Staff could also have changed during this period and not have been involved in the development or implementation of the wellness policy.

Suggestions for Future Research

Nutrition education material written to be integrated into curriculum to support NCLB, written for each grade level, and sequential needs to be developed and evaluated. Further research is needed to establish how wellness policy implementation progresses and will be evaluated. Research needs to be conducted on how to improve the attitude of low income schools' foodservice directors toward obesity prevention. Further research is needed to see if greater community input and communication would improve the public interest in student wellness.

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APPENDIX A
IRB APPROVAL LETTER FOR STUDY

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office of Research Assurances
Vice Provost for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

DATE: 9 January 2007

TO: Carol Longley
1566 Highway 17, Aledo, IL 61231

CC: Dr. Jeannie Sneed
18 B MacKay Hall

FROM: Jan Canny, IRB Administrator
Office of Research Assurances

SUBJECT: **IRB ID 06-638**

Approval Date: 9 January 2007
Date for Continuing Review: 8 January 2008

The Chair of the Institutional Review Board of Iowa State University has reviewed and approved the protocol entitled: "Process of Developing a School District Wellness Policy." The protocol has been assigned the following ID Number: 06-638**.** Please refer to this number in all correspondence regarding the protocol.

Your study has been approved from 9 January 2007to 8 January 2008. The **continuing review date** for this study is no later than **8 January 2008**. Federal regulations require continuing review of ongoing projects. Please submit the form with sufficient time (i.e. three to four weeks) for the IRB to review and approve continuation of the study, prior to the continuing review date.

Failure to complete and submit the continuing review form will result in expiration of IRB approval on the continuing review date and the file will be administratively closed. All research related activities involving the participants **must stop** on the continuing review date, until approval can be re-established, except when necessary to eliminate immediate hazard to research participants. As a courtesy to you, we will send a reminder of the approaching review prior to this date.

Please remember that any **changes in the protocol or consent form** may not be implemented without prior IRB review and approval, using the "Continuing Review and/or Modification" form. Research investigators are expected to comply with the principles of the Belmont Report, and state and federal regulations regarding the involvement of humans in research. These documents are located on the Office of Research Assurances website or available by calling (515) 294-4566, www.compliance.iastate.edu.

You must promptly report any of the following to the IRB: (1) **all serious and/or unexpected adverse experiences** involving risks to subjects or others; and (2) **any other unanticipated problems involving risks** to subjects or others.

Upon completion of the project, please submit a Project Closure Form to the Office of Research Assurances, 1138 Pearson Hall, to officially close the project.

APPENDIX B
IRB APPROVAL LETTER FOR STUDY MODIFICATION

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office of Research Assurances
Vice Provost for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515 294-4566
FAX 515 294-4267

DATE: April 2, 2007

TO: Carol H. Longley
1566 Hwy. 17, Aledo, IL 61231

CC: Jeannie Sneed
18 B MacKay Hall

FROM: Jan Canny, IRB Administrator
Office of Research Assurances

IRB ID: 06 -638 **Study Review Date:** 30 March 2007

Following assessment of the modification to the project, "Process of Developing a Wellness Policy," the Institutional Review Board (IRB) Co-Chair has declared the study exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b)(2). The applicable exemption category is provided below for your information. Please note that you must submit all research involving human participants for review by the IRB. Only the IRB may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

The IRB determination of exemption means that this project does not need to meet the requirements from the Department of Health and Human Service (DHHS) regulations for the protection of human subjects, unless required by the IRB. We do, however, urge you to protect the rights of your participants in the same ways that you would if the project was required to follow the regulations. This includes providing relevant information about the research to the participants.

Because your project is exempt, you do not need to submit an application for continuing review. However, you must carry out the research as proposed in the IRB application, including obtaining and documenting (signed) informed consent if you have stated in your application that you will do so or if required by the IRB.

Any modification of this research should be submitted to the IRB on a Continuation and/or Modification form, prior to making any changes, to determine if the project still meets the Federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.

Exemption Category

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

APPENDIX C
INTERVIEW FORM, PHASE 2

A Study of the Process of Wellness Policy Formation in Schools

Part 1. Committee process for development of wellness policy	**Response**
How many members were on the wellness policy committee?	
How was the committee formed?	
What barriers were encountered in developing the wellness policy?	
What were the supporting factors in developing the wellness policy?	
What was the background or expertise of committee members?	
Who led the committee?	
How did the committee evaluate the current status of the district?	
How were policies developed in the committee?	
Who wrote the policies?	
How did the committee obtain public input?	
Part 2. Motivational Factors	
Describe factors that supported the development and implementation of the wellness policy.	
Describe factors that do not support implementation of the wellness policy.	
What would motivate a principal to implement the wellness policy?	
What would motivate a superintendent to support the implementation of this wellness policy?	
Part 3. Knowledge System	

What factors made you believe you had enough knowledge within the committee to develop the policy for nutritional goals?	
What factors made you believe you had enough knowledge within the committee to develop the policy for physical fitness goals?	
What factors make you believe you had adequate skills within the committee to help implement the wellness policy?	
Part 4. Belief System	
With all the competing factors for time, do you believe the development and implementation of a wellness policy is possible or should have been done in your district?	
What priority level do you believe school administrators will give to the wellness policy?	
What priority level do you believe community members will give to the wellness policy?	
How do you believe the wellness policy will change nutrition and physical education at your school? (meal programs, students, culture)	
How do you believe the wellness policy will change nutrition standards?	
How do you believe this change will benefit kids?	
What responsibility do you believe school personnel, such as superintendents, teachers, foodservice, custodians have in obesity prevention?	
Part 5. Key elements developed in the wellness policy	
What are the goals for nutrition education?	
What are the goals for physical fitness?	
What are the goals for other school-based activities that are designed to promote student wellness?	

What are the nutrition guidelines for all available foods on each school campus every school day?		
What assurances have been established that reimbursable meals are not less restrictive than regulations issued by the Secretary of Agriculture?		
What is the plan for measuring implementation to ensure that the school meets the local wellness policy?		
What is the plan selection of one or more persons to ensure that the school meets the local wellness policy?		
What elements have you implemented to date?		
Part 6. School Environment		
What is the school policy about the sale of food? Foods, time, location		
Are vending machines off during the day?		
What is the school policy about bringing meals and snacks from home? Are there any restrictions?		
Part 7. **About the Respondent and District**: Check all that apply:	**Yes**	**No**
What is your district position?		
Foodservice Director		
Foodservice Manager		
Cook		
Responsible for several departments in addition to foodservice, name other departments?		
What is your highest level of education? (Check 1):		
High School Graduate		
Some College		
4 year Degree		
Some Post Graduate Education		
Master's Degree		
Post Master's Degree		
Doctorate		

Part 7. About the School District:		
What is your school district enrollment?		
Less than 2,500		
2,500-5,000		
5,000-10,000		
Greater than 10,000		
What is your school district percentage of free and reduced lunches?		
Is your district foodservice program self-operated or operated by a management company?		
Self-operated		
Management Company		

APPENDIX D
QUESTIONNAIRE, CONTACT 2, PHASE 2

Wellness Policy Development
April 2007

Does your school district participate in the National School Lunch Program? (Please circle your answer)

Yes
No

Part 1 Wellness policy components. Please indicate the wellness policy components that were in place before the wellness policy legislation was enacted by circling yes or no, and then indicate wellness policy components your district developed after the law was passed.

	Before June 2004		After June 2004	
Nutrition Education Component				
Followed state-specified standards for nutrition and health education	Yes	No	Yes	No
Integrated nutrition education into current curriculum	Yes	No	Yes	No
Offered nutrition education for each grade level	Yes	No	Yes	No
Offered nutrition education for adults	Yes	No	Yes	No
Required professional standards/development for nutrition education instructors	Yes	No	Yes	No
Utilized the foodservice department for nutrition education	Yes	No	Yes	No
Physical Education Component				
Established specified number of minutes of physical activity per day	Yes	No	Yes	No
Followed state-specified standards for physical education	Yes	No	Yes	No
Incorporated physical activity into classroom activities	Yes	No	Yes	No
Required professional standards/development for physical education instructors	Yes	No	Yes	No
Nutrition Policy Component				
a la carte nutrition policy for fat content	Yes	No	Yes	No
a la carte nutrition policy for saturated fat content	Yes	No	Yes	No
a la carte nutrition policy for sugar content	Yes	No	Yes	No
a la carte nutrition policy for total calories per portion	Yes	No	Yes	No
Beverage portion size limitation	Yes	No	Yes	No

Beverage nutrition standards	**Yes**	**No**	**Yes**	**No**
Location food can be sold on school campus	**Yes**	**No**	**Yes**	**No**
Nutrition guidelines for reimbursable school meals	**Yes**	**No**	**Yes**	**No**
Nutrition guidelines for vending machines	**Yes**	**No**	**Yes**	**No**
Nutrition guidelines for fundraisers	**Yes**	**No**	**Yes**	**No**
Nutrition guidelines for food and beverages available at classroom parties	**Yes**	**No**	**Yes**	**No**
Nutrition guidelines for use of food and beverages as a reward	**Yes**	**No**	**Yes**	**No**
Time food can be sold during the school day	**Yes**	**No**	**Yes**	**No**
Other School-Based Activities Component				
Ensured adequate time for meals	**Yes**	**No**	**Yes**	**No**
Scheduled recess before lunch	**Yes**	**No**	**Yes**	**No**
Staff wellness program encouraged staff to serve as role models for wellness behaviors	**Yes**	**No**	**Yes**	**No**
Implementation and Monitoring of Policy in Buildings Component				
Principal responsible for implementation	**Yes**	**No**	**Yes**	**No**
Principal responsible for evaluation	**Yes**	**No**	**Yes**	**No**
Superintendent responsible for implementation	**Yes**	**No**	**Yes**	**No**
Superintendent responsible for evaluation	**Yes**	**No**	**Yes**	**No**
Wellness team responsible for implementation	**Yes**	**No**	**Yes**	**No**
Wellness team responsible for evaluation	**Yes**	**No**	**Yes**	**No**
Foodservice director responsible for implementation	**Yes**	**No**	**Yes**	**No**
Foodservice director responsible for evaluation	**Yes**	**No**	**Yes**	**No**

Part 2 Attitudes Regarding Wellness Policy and Potential for Impact. Please indicate your belief of the impact wellness policy will have on your school district by circling your reaction to the following statements.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Our district wellness policy will improve the health of students.	**SD**	**D**	**N**	**A**	**SA**
Our district wellness policy will improve district nutrition guidelines.	**SD**	**D**	**N**	**A**	**SA**
Our district wellness policy will improve nutrition education.	**SD**	**D**	**N**	**A**	**SA**
Our district wellness policy will improve physical education.	**SD**	**D**	**N**	**A**	**SA**

Our district wellness policy is the responsibility of all district employees.	**SD**	**D**	**N**	**A**	**SA**
Obesity prevention is the responsibility of the family.	**SD**	**D**	**N**	**A**	**SA**
Obesity prevention is the responsibility of the school.	**SD**	**D**	**N**	**A**	**SA**
Obesity prevention is the responsibility of the community.	**SD**	**D**	**N**	**A**	**SA**
Obesity prevention is a top priority in my community.	**SD**	**D**	**N**	**A**	**SA**
Our district wellness policy can be implemented with the current resources in the district.	**SD**	**D**	**N**	**A**	**SA**

Part 3 Wellness committee process items

Rate your perception of the level of involvement or commitment of committee members to the development of the wellness policy by using the following scale.

	NA	**Not involved 0**	**Little involvement 1**	**2**	**3**	**Moderate 4**	**5**	**6**	**Very 7**
Curriculum coordinator									
Foodservice director									
Foodservice staff									
Health coordinator									
Business partner									
Nurse									
Parent									
Principal									
Physician									
Superintendent									
Teacher									
Other: specify									

Who chaired or co-chaired the committee? (Circle all that apply)
A. Curriculum coordinator
B. Foodservice director
C. Foodservice staff
D. Health coordinator
E. Industry representative
F. Nurse
G. Parent
H. Principal
I. Physician
J. Superintendent
K. Teacher
L. Other
What additional expertise was needed on the wellness committee? (Circle all that apply)
A. Curriculum expertise
B. Foodservice management expertise
C. Community input
D. School administration expertise
E. Industry expertise
F. Medical community expertise
G. Nutrition
H. Student input
I. Teacher expertise
J. Other
Resources used in developing the wellness policy? (Check all that apply)
School Nutrition Association template
Industry materials, such as the *Good for Me* kit by Tysons, Dairy Council materials
NFSMI materials
USDA materials
CDC materials
State Department of Education model or template
Other school districts' sample policies
Part 4 Factors that support wellness policy development and implementation. Please read the following statements. Using the following scale, check the response that best describes how the factor supported the development of the wellness policy in your district.

Extent to which factor is a support for wellness policy in your district

	Not in place	**No support**	**Some support**	**Moder-ate support**	**Very supportive**
Federal mandate for a wellness policy in schools					

Determination of baseline wellness activities in your district					
Additional state nutrition standards or guidelines					
District health committee prior to the wellness policy mandate					
Wellness policy template developed by your state department					
Training on wellness policy writing					
Having public meeting about the wellness policy assisted in the development process.					
Concerns for children's health supported the development of the wellness policy.					
Having a superintendent that "championed" the wellness policy supported the development of the policy.					
Part 5 Barriers for wellness policy development and implementation. Please read the following statements. Circle the response that best describes whether or not this is a current barrier to implementing the wellness policy in your district using the following scale.					
Extent to which factor is a barrier for wellness policy in your district					
Barrier	**Not a barrier**	**Somewhat of a barrier**	**Moderate barrier**	**Major Barrier**	
Requirements of No Child Left Behind on teacher instruction time.					
Requirements of No Child Left Behind on principal leadership time					
Need for fundraisers with food					
Lack of perceived need for policy					
Lack of support by teachers					

Lack of support by parents				
Lack of support by administration				
Lack of connection in the power structure of the school district				
Lack of organizational structure in the district to make changes needed for wellness policy.				

Part 6 Demographics

What is your school district enrollment? (circle one)

- **Medium size- 2,500-10,000**
- **Large size district-10,001-39,999**
- **Extra large size-greater than 40,000**

What is your school district percentage of free and reduced meal applications?(circle one)

- **0-10%**
- **11-20%**
- **21-30%**
- **31-40%**
- **41-50%**
- **51-60%**
- **61-70%**
- **71-80%**
- **81-90%**
- **91-100%**

What is your average daily participation rate at lunch? (circle one)

- **0-10%**
- **11-20%**
- **21-30%**
- **31-40%**
- **41-50%**
- **51-60%**
- **61-70%**
- **71-80%**
- **81-90%**
- **91-100%**

What is your USDA region? (circle one)

- **Mid-Atlantic Region**
- **Midwest Region**
- **Mountain Region**

• **Northeast Region** • **Southeast Region** • **Southwest Region** • **Western Region**
What is your state? (which one) _____
Which of the following best describes your job at the school district? (circle one) • **Business Manager** • **Foodservice Director** • **Health Coordinator** • **Superintendent** • **Other_____**
Which of the following best describes your education level? (circle one) • **High school** • **Some college** • **Bachelor's degree** • **Graduate degree**
Please describe your educational background? (circle all that apply) • **Business** • **Education** • **Hotel and Restaurant Management** • **Marketing** • **Nutrition** • **Other**
What other credentials do you have? (circle those that apply) • **Certified SNA** • **Registered dietitian** • **SNS** • **Other, please note_____**
Is your school district self-operated or managed by a management company? (circle one) • **Self-operated** • **Management company**

Thank you for your participation in the research. Please return the survey in the self-addressed stamped envelope.

Again, thank you for your time and help.

If you wish to receive a copy of the results please send an e-mail request to:
Carol Longley at the following address: carollongley@qconline.com

APPENDIX E
GENERAL PROTOCOL FOR RECRUITING PARTICIPANTS

Introduction	May I please speak to _____? My name is ___and I am calling from Iowa State University. I am conducting an important survey to learn about wellness policy development in your school district. The purpose of my call is to recruit participants. Your name was given to me by your state department as someone very involved and familiar with the wellness policy development in your school district. Is this a convenient time to continue? 1- Yes go to background 2- No go to better time
Better Time	The interview will last about 30 minutes, and could be scheduled at your convenience. Is there another time we could contact you? 1- Yes schedule appointment 2- No Thank you for your time

Adapted from *Introductory Scripts for Telephone Surveys,* University of Waterloo Survey Research Centre.

APPENDIX F
GENERAL PROTOCOL FOR TELEPHONE INTERVIEW, PHASE 2

Introduction	May I please speak to _____? My name is ___and I am calling from Iowa State University. I am conducting an important survey to learn about wellness policy development in your school district. At an earlier time, you indicated that you would be willing to participate in research on the wellness policy in schools. Is this a convenient time to continue? 1- Yes go to background 2- No go to better time
Better Time	The interview will last about 30 minutes, and can be scheduled at your convenience. Is there another time we could contact you? 1- Yes schedule appointment 2- No Thank you for your time
Background	The informed consent document was enclosed with the materials mailed to you. Do you have any questions about the study, the risks, benefits, cost, participants' rights, or confidentiality? I understand you voluntarily agree to participate in this study, and your questions have been satisfactorily answered. (sign investigator statement and file)
Survey	Thank you for agreeing to participate. I will begin the survey now.
Debriefing	That's all the questions that I have for you. Do you have any questions or comments? Would you like a copy of the results? (If so, the name and e-mail address will be recorded).
Thank you	Thank you very much for your help. I greatly appreciate it!

Adapted from *Introductory Scripts for Telephone Surveys,* University of Waterloo Survey Research Centre

APPENDIX G
COVER LETTER TO INTERVIEW PARTICIPANTS
(utilizing department letterhead)

Janurary 9, 2007

Dear Foodservice Director,

Obesity, especially in children, is reaching epidemic proportion in the United States (US DHHS, 2001). The search for solutions to the increasing rate of obesity turns the focus on schools that touch the lives of 95% of children in the United States. Because of federal legislation, school boards are required to develop policy to improve the nutrition environment, and physical and nutrition education. The interview examines the development of the wellness policy in your district. I am conducting this study as part of my doctoral studies at Iowa State University.

We would greatly appreciate the 30 minutes necessary to complete the interview. Your appointment time is ____. Your participation in the survey is voluntary. Your interview will be digitally recorded. You may skip any questions you are uncomfortable answering. Please be assured that all responses will be reported as a group, and your individual response will be kept confidential.

The Institutional Review Board of Iowa State University has approved this study. If you have any questions about the rights of research subjects or research-related injury, please contact the Office of Research Assurances, 1138 Pearson Hall, Iowa State University, (515)-294-3315. Should you have any comments or concerns resulting from participating in this study, please contact Dr. Jeannie Sneed, major professor, or myself. Our contact information is below.

Thank you in advance for your participation, we would like to extend a thank you for your time and effort in this valuable research study. I will be happy to provide results of the survey if you send me your e-mail address.

Cordially,

Carol Longley, RD, MSW
PhD Candidate
Iowa State University
1566 Highway 17
Aledo, IL 61231
(309) 582-5720
carollongley@qconline.com

Jeannie Sneed, PhD, RD, CFSP, SFNS
Professor
Iowa State University
31 MacKay Hall
Ames, IA 50011-1120
(405) 227-0927
jsneed@iastate.edu

APPENDIX H
INFORMED CONSENT DOCUMENT

Background	INFORMED CONSENT DOCUMENT **Title of Study:** Process of Developing a School Wellness Policy **Investigators:** Carol Longley This is a research study. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time.

	following study procedures to be followed: You will be asked to complete a survey about the process of the wellness policy development in your school; you will be asked descriptive information about your job and school. The conversation will be video recorded with a tape recorder attached to the phone. Your name will not be recorded on the video. The tape will be erased as soon as the records are typed. Typed records will be shredded in October, 2007. You may skip any question that you do not wish to answer or that makes you feel uncomfortable. RISKS There are no foreseeable risks at this time from participating in this study.

	records for quality assurance and data analysis. These records may contain private information. To ensure confidentiality to the extent permitted by law, the following measures will be taken subjects will be assigned a unique code and letter and will be used on forms instead of their name. All records will be kept in a locked file cabinet or on a password protected computer file. The video tapes will be erased immediately after transcribing, and the written records shredded October 2007. If the results are published, your identity will remain confidential.

	INVESTIGATOR STATEMENT I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate. _____ _____ _____ _____ _____ _____ _____ _____ (Signature of Person Obtaining (Date) Informed Consent)

APPENDIX I
INTRODUCTORY LETTER TO STUDY PARTICIPANTS
(utilizing department letterhead)

March 28, 2007

Dear Foodservice Director,

Within the next few days, you will receive a request to complete a brief survey.

The survey is important. The Child and WIC Reauthorization Act of 2004 asked schools to write a wellness policy. This survey examines the development of the wellness policy in your district. I am conducting this study as part of my doctoral studies at Iowa State University.

Your participation in the survey is voluntary. Please be assured that all responses will be reported as a group, and your individual response will be kept confidential. You can skip any question you are uncomfortable answering. The Institutional Review Board of Iowa State University has approved this study. If you have any questions about the rights of research subjects or research-related injury, please contact the Office of Research Assurances, 1138 Pearson Hall, Iowa State University, (515)-294-3315.

We would greatly appreciate the few minutes necessary to complete and return the survey.

Thank you in advance for your participation.

Cordially,

Carol Longley, RD, MSW
PhD Candidate
Iowa State University

Jeannie Sneed, PhD, RD, CFSP, SFNS
Professor
Iowa State University

APPENDIX J
COVER LETTER TO STUDY PARTICIPANTS
(utilizing department letterhead)

April 12, 2007

Dear Foodservice Director,

Obesity, especially in children, is reaching epidemic proportion in the United States (US DHHS, 2001). The search for solutions to the increasing rate of obesity turns the focus on schools that touch the lives of 95% of children in the United States. Because of federal legislation, school boards are required to develop policy to improve the nutrition environment, and physical and nutrition education. This survey examines the development of the wellness policy in your district. I am conducting this research study as part of my doctoral studies at Iowa State University.

We would greatly appreciate the 10 minutes necessary to complete and return the survey. We request that you reply by April 18. Your participation in the survey is voluntary. You may skip any questions you are uncomfortable answering. Please be assured that all responses will be reported as a group, and your individual response will be kept confidential.

The Institutional Review Board of Iowa State University has approved this study. If you have any questions about the rights of research subjects or research-related injury, please contact the Office of Research Assurances, 1138 Pearson Hall, Iowa State University, (515)-294-3315. Should you have any comments or concerns resulting from participating in this study, please contact Dr. Jeannie Sneed, major professor, or myself. Our contact information is below.

Thank you in advance for your participation, we would like to extend a thank you for your time and effort in this valuable research study. I will be happy to provide results of the survey if you send me your e-mail address.

Cordially,

[redacted]
Carol Longley, RD, MSW
PhD Candidate
Iowa State University
1566 Highway 17
Aledo, IL 61231
(309) 582-5720

[redacted]
Jeannie Sneed, PhD, RD, CFSP, SFNS
Professor
Iowa State University
31 MacKay Hall
Ames, IA 50011-1120
(405) 227-0927

APPENDIX K
POSTCARD REMINDER, CONTACT 3

Last week a questionnaire seeking your opinion about the development of your school wellness policy was mailed to you. Your school district was drawn randomly from schools in the United States.

If you have already completed and returned the questionnaire to us, please accept our sincere thanks. If not, please do so today. We are particularly grateful for your help because it is only by asking foodservice directors like you to share your experiences that we can understand what has happened with the wellness policy.

If you did not receive a questionnaire, or it is misplaced, please e-mail carollongley@qconline.com or call 309-582-5720 and we will get another survey in the mail today.

Sincerely,

Carol Longley, RD, MSW
Jeannie Sneed, RD, PhD

APPENDIX L
REMINDER LETTER, CONTACT 4, PHASE 3

April 25, 2007

Dear Foodservice Director,

About three weeks ago, I sent a questionnaire to you that asked about your experiences with the Wellness Policy. To the best of my knowledge, it's not yet returned.

The comments of foodservice directors who have already responded include a wide variety of experiences with the Wellness Policy. Many have described experiences good and bad in implementing the policy. We think results are going to be useful to legislators and others.

We are contacting you again because of the importance that your questionnaire has for helping us get accurate results. Although we sent questionnaires to foodservice directors in every state, it's only by hearing from everyone that we can be sure that the results are truly representative.

A few people have contacted us to say they were not working for their school district prior to June 2004 when the legislation was first written. If this situation pertain to you please return the survey with questions answered that you have experienced and leave the others blank. If you have recently started at the job and have very limited knowledge of the policy, please answer the first question and return the survey so I can take you off the contact list.

We hope that you will fill out and return the questionnaire soon, but if for any reason you prefer not to answer it, please let us know by returning a blank questionnaire.

Cordially,

Carol Longley, RD, MSW
PhD Candidate
Iowa State University
1566 Highway 17
Aledo, IL 61231
(309) 582-5720
carollongley@qconline.com

Jeannie Sneed, PhD, RD, CFSP, SFNS
Professor
Iowa State University
31 MacKay Hall
Ames, IA 50011-1120
(405) 227-0927
jsneed@iastate.edu

APPENDIX M
REMINDER LETTER, CONTACT 5, PHASE 3

May 4, 2007

Dear Foodservice Director,

During the last month, we have sent you several mailings about an important research study we are conducting regarding the wellness policy.

Its purpose is to help federal and state agencies and lawmakers understand the process and progress of the school wellness policy.

The study is drawing to a close, and this is the last contact that will be made with the random sample of people who we think can provide first hand knowledge of the policy development.

We are sending the final contact by priority mail because of our concern that people who have not responded may have had different experiences than those who have. Hearing from everyone in this small nationwide sample helps assure that the survey results are as accurate as possible.

We also want to assure you that your response to this study is voluntary, and if you prefer not to respond that's fine. If you are recently employed by your district, and feel that we made a mistake including you in this study, please let us know by returning the blank questionnaire with a note indicating so. This would be very helpful.
We are contacting you again because of the importance that your questionnaire has for helping us get accurate results. Although we sent questionnaires to foodservice directors in every state, it's only by hearing from everyone that we can be sure that the results are truly representative.

Finally, we appreciate your willingness to consider our request as we conclude this effort to better understand the development and implementation of the wellness policy. Thank you so much.

Sincerely,

Carol Longley, RD, MSW
PhD Candidate
Iowa State University
1566 Highway 17
Aledo, IL 61231
(309) 582-5720
carollongley@qconline.com

Jeannie Sneed, PhD, RD, CFSP, SFNS
Professor
Iowa State University
31 MacKay Hall
Ames, IA 50011-1120
(405) 227-0927
jsneed@iastate.edu

APPENDIX N
SUMMARY OF RESULTS FOR TELEPHONE INTERVIEW FOR PHASE 2

Summary of Themes, Connecting Strategies, and Ideas found in Wellness Policy Interviews

1. **How many members were on the wellness policy committee?**

Mean = 17.5, Median = 17, Mode = 18 size of wellness committee.

2. **How was the committee formed?**
Generally, a chairperson was appointed by the school district administration. The chairperson then invited or received volunteers for the committee. Many of the committee members reflected the list required by the law.

3. **What was the background or expertise of committee members? Could you list the various position titles of members of the committee?**

The wellness committee clearly indicated strong representation from school faculty and administration. The most frequently represented groups were foodservice directors (21, 100%), school nurses (15, 71%), parents(16, 76%), principals (12, 57%), school board members (9, 43 %), students (10, 48%), and teachers (16, 76%). The composition of this group is unique. This is the first time key players were together discussing major wellness issues. Only three districts (14%) reported having a wellness coordinator or committee like this to address health problems. The committee structure also did not have a history of working with health issues and implementing a non-educational issue in an educational institution.

3. **Was there a need for more expertise?**

Missing expertise came from three areas: medical expertise, administrative/board support or student/parent involvement.

4. What resources were used in the development of the wellness policy?

Interviewees reported information and resources were readily available. Districts reported using materials from several sources. Many reported comparing more than one source and adapting templates to the needs of the district. Districts reported trying to develop policy buy-in by incorporating current practices. One state reported a state template had been developed that had an assessment tool and goal setting as part of the program. This format was reported as very useful in long-range implementation.

5. **What was the level of interest or involvement of committee members?**

A dichotomous pattern of interest was evident with the wellness committees. Participants were highly involved or showed minimal interest.

6. **Who led the committee?**

Committees were chaired by a variety of hierarchical and organizational entities. Assistant Superintendents (7, 33%) were the most frequent chair. The Foodservice Director chaired 6 (29%) committees, but 4 of those were with a co-chair. Four of the committee chairs were volunteers to the school district. Interestingly, only one principal chaired a committee yet most districts state the principal will be the primary position responsible for implementing the policy.

7. **How did the committee evaluate the current status of the district?**

Two thirds (14, 66%) of the schools either did not evaluate the status of the district or used discussion to evaluate their current wellness status. Discussion does not have a benchmark or established criteria to mark future progress of the district. One district used the School Health Index as a self-assessment tool. It covers 8 modules, corresponding to the different components of a coordinated school health program which include: (1) school and health safety; (2) health education; (3) physical education; (4) nutrition services; (6) counseling, psychological, and social services; (7) staff health promotion; and (8) family and community involvement. Additional methods included *Healthy Kids Survey*, State Department of Education Surveys, and student BMI levels.

8. **How were policies developed in the committee?**

Policy development had no consistent pattern of development.

9. **Who wrote the policies?**

Wellness policy committees were reported as the most frequent author of the wellness policies.

10. **How did the committee obtain public input?**

Outreach to the community was limited to the parents and participants on the committee for nine (43%) school districts. Four (19%) districts tried to do public outreach either through the district web, public meetings, or the newspaper. Two (10%) districts used their pre-existing parent advisory committee for a structured feedback loop. Six (29%) school districts noted minimal community outreach

11. **Describe factors that supported the development of the wellness policy.**

A major support of a wellness policy development was a federal mandate. The second major area of support was concern about the health of students. The third area of support was the addition of state laws and regulations supporting the wellness policies.

12. **Describe factors that support the implementation of the wellness policy.**

Seven themes of barriers were noted in this section and moved to the next question. There is no strong or common theme recorded to drive the implementation of the policy.

13. **What barriers were encountered in developing the wellness policy?**

The major barrier to the development of the wellness policy appears to be competition for time. The second barrier is wellness is not a priority in the school district. The third barrier is the need for funds for student activities.

14. **Describe factors that do not support implementation of the wellness policy.**
Barriers to implementation appear similar to the development of the policy. Competition for time and setting of wellness as a priority appear to dominate concerns for implementation. Funding for additional PE is also a noted concern.

15. **Are there some highly motivated principals in your district implementing the wellness policy? What have they done differently than those who are not very supportive?**

Participants considered examples of administrative support by noting examples of principals in their district. Highly motivated principals demonstrated support by changing fund-raising efforts (4, 19%), and changing the content of vending machines (5, 24%). Others demonstrated support by implementing the entire policy and others formed wellness teams in their schools.

16. **Is the superintendent in your district or a neighboring districts highly motivated in implementing the wellness policy? What have they done to demonstrate support for the wellness policy?**

Superintendents show support most frequently with verbal support and enforcement of policy. Other superintendents are not highly motivated because of more pressing priorities.

17. **Do you believe the wellness policy has a probability of success is your district?**

Foodservice Directors reported a high probability of success for the wellness policy in their school districts.

18. **What is really needed in your school district to make the wellness policy successful?**

Enforcement of the wellness policy by school administration and money to support the program are the most frequently mentioned needs to make the wellness policy successful.

19. **What priority level do you believe community members will give to the wellness policy?**

Foodservice Directors reported low to middle priority level of wellness policy by the community in their district. The two districts reporting the high community priority were from the western USDA region.

20. **How do you believe the wellness policy will change nutrition and physical education at your school? (meal programs, students, culture)**

Foodservice directors believe the wellness policy has already changed the foods offered in schools. Some of the changes in foods offered were driven by changes in state laws. Foodservice directors believe changes in physical education will be more difficult and require legislative intervention and funding for success.

21. **How do you believe the wellness policy will change nutrition standards?**

Foodservice Directors believe the major change in nutrition policies due to the wellness policy will come in vending machines and a la carte foods. Changes in meal programs have occurred over time due to changes in state and federal laws. Directors also believe the establishment of one federal nutrition policy would be helpful to avoid confusion for all entities involved in school meals.

22. **How do you believe this change will benefit kids?**

Foodservice Directors believe changes brought about by the wellness policy will include more exposure to healthy foods. The wellness policy has brought together departments that normally work independently in schools. The policy, Foodservice Director's believe, has raised awareness levels of good nutrition and need for exercise.

23. **What responsibility do you believe school personnel, such as superintendents, teachers, foodservice, and custodians, have in obesity prevention?**

Foodservice Directors believe school personnel primary responsibility in obesity preventation is to offer a good example of wellness behavior at school. In addition to serving as good role models, the foodservice department is to offer and encourage healthy food choices. Foodservice Director's believe obesity prevention is a shared responsibility with parents.

24. **What are the goals for nutrition education?**

Foodservice directors indicated wellness plans addressed overarching goals for nutrition education. Foodservice Directors reported goals such as provided for k-12, sequential, corresponding to testing and benchmarks, and integrated into core curriculum. The only specific goal related to students ability to make informed and educated decisions about lifelong eating and physical education habits. Goals did call for certified health educators and the goal of providing staff development. The framework for the educational goals seem present, however, expertise identifying what a child needed to learn at different stages, then built on was only identified by one wellness plan. One district identified that during implementation it became apparent that no one knew what was being taught about nutrition.

25. **What are the goals for physical fitness?**

Foodservice Directors reported the goals for physical education varied from specific minutes per school day of physical education for all grade levels to plans trying to incorporate physical activity into the entire school day.

26. **What are the goals for other school-based activities that are designed to promote student wellness?**

Foodservice directors reported similar goals: adequate time for student's meals and consistent health messages for the entire school day with the use of food for rewards and parties.

27. **What are the nutrition guidelines for all available foods on each school campus every school day—particularly for school meals?**

Guidelines for school meals follow at minimum the federal guidelines. Eight participants indicated further guidelines established by states to regulate meals. The state guidelines generally are variance of the *Healthier U.S. School Challenge* recommendations. Sales of full meals only were generally offered to elementary schools. Restrictions on frying potatoes and limitations of portion size were reported by Foodservice Directors.

28. **What are the nutrition guidelines for all available foods on each school campus every school day—for a la carte foods**?

Foodservice Directors reported no a la carte sales or a la carte sales limited to foods served on the regular school lunch meal. Other Foodservice Directors reported a la carte sales guided by state laws with restrictions of fat, saturated fat, sugar, portion sizes or calorie size limitations.

29. **What are the nutrition guidelines for all available foods on each school campus every school day—for field trips?**

Foodservice Directors reported a policy for food for field trips was not addressed in their wellness policy except if the state law already regulated what was served.

30. **What assurances have been established that reimbursable meals are not less restrictive than regulations issued by the Secretary of Agriculture?**

Foodservice Directors report the regular inspections of their program by USDA in SMI and CRI reviews will provide assurance that the meals are not less restrictive than the USDA guideline. Some states are indicating they are having difficulty meeting needed calorie limits with the state nutrition laws superimposed on the federal laws.

31. **What is the plan for measuring implementation to ensure that the school meets the local wellness policy?**

Foodservice Directors report the plan for measuring implementation of the wellness plan fell in two categories either the district had no plan in place yet or they had an assessment tool or check list that determined goals that was reviewed yearly for progress.

32. **Who or what position is responsible for the wellness policy implementation in your school district?**

Foodservice Directors report most frequently they do not know who or what position is responsible for implementing the wellness policy. The Second most freqeunet answer was the principal at the building level.

33. **What elements have you implemented to date?**

Foodservice Directors report varying levels of progress in implementing the wellness plan. Districts report most frequently the foodservice section of the plan is implemented (8) with five districts report full implementation of the plan. Districts report still planning and training staff in the implementation of the wellness plan.

34. **What is the school policy about the sale of food? Foods, time, location**

Foodservice Directors report a time and place rule being established through either the wellness policy or state laws for their districts. The definition of time and place are widely varied.

35. **What is the school policy about the timing of vending machines on and off?**

Foodservice directors report vending policies very variable. States with laws and regulations had clear direction for vending in their wellness policies. Other states showed great variation from on 24 hours to off only during meal times.

36. **What is your nutrition policy regarding vending machines?**

Foodservice Directors report the nutrition guidelines for vending machines are highly variable. States with laws and regulations are specific.

37. **What is your nutrition policy regarding school parties?**

Foodservice directors report wellness policies encourage or recommend nutritious or non-food items for parties in their policies. Two foodservice directors report this issue has not been addressed.

38. **What is your policy regarding food as a reward?**

Foodservice Directors reported their wellness policies most frequently encouraged teachers (7) to use non-food reward. The second most frequent policy (6) did not include policies on food as rewards.

39. **What is your nutrition policy for school fundraisers?**

Foodservice Directors indicated fundraisers were addressed with wellness policies. Guidance came in three forms: no fundraising during the school day, no fundraisers during meal times, and fundraisers must use foods that follow the nutrition policy or state laws. Four districts did not address fundraisers in their policy.

40. **What is the school policy about bringing meals and snacks from home? Are there any restrictions?**

Foodservice Directors report most frequently (6) no policy was developed for meals and snacks brought from home. It was reported principals determined the policy.

41. **What is your highest level of education?**

Participants represented a highly educated segment of school nutrition directors with 17 participants holding bachelor or master degrees.

42. **What is your school district enrollment?**

School districts represented medium-sized districts or larger.

43. **What is your school district percentage of free and reduced meal applications**

Wide varieties of socioeconomic school districts were represented in the study.

44. Is your district foodservice program self-operated or operated by a management company?

All foodservice directors worked in self-operated districts.

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